Industrial Finishing

REG. U.S. PAT. OFF.

Devoted to the Finishing of Industrial Products
Published Monthly at Indianapolis, Indiana

Vol. III, No. 1 NOVEMBER, 1926 $1.00 a Year

GLIDDEN

INDUSTRIAL

Lacq

THE GLIDDEN COMPANY
National Headquarters
CLEVELAND

Since 1884

ZAPON

LACQUERS & LACQUER ENAMELS

The Recognized Standard

NITRO-CELLULOSE, the base of Zapon Lacquers, is made by treating cotton linters with a mixture of nitric and sulphuric acids. It must be absolutely free from residual acid.

In the production of nitro-cellulose at the Stamford plant of The Zapon Company, it is washed and boiled 16 times to insure absolute purity. 238 gallons of water are used to each pound of nitro-cellulose.

THE ZAPON COMPANY

247 Park Avenue, New York City

BRANCHES:

Chicago	45th and La Salle Sts.	Los Angeles	1214 Venice Boulevard
Cleveland	8810 Bessemer Ave.	New Haven	185 Church St.
Detroit	Congress and Griswold Sts.	Oakland	304 12th St.
New York	547 Greenwich St.	San Francisco	160 Seventh St.

ZAPON

The pioneer lacquer finish

We originated and perfected the OIL and LACQUER

SHADING STAINS

which are now being used to produce attractive effects on high-grade furniture throughout the United States

They blend perfectly and can be applied by spraying, brushing or dipping

Our Special Lacquer Fillers

are also recommended by the largest Lacquer Manufacturers throughout the country.

Write for samples of both our shading stains and fillers and see what can be accomplished with them. No obligation.

LINDEMAN WOOD-FINISH CO.

MAIN OFFICE AND FACTORY, INDIANAPOLIS, IND.

Warehouses and Branch Offices, Grand Rapids, Mich., and High Point, N. C.

Hilo Crystallizing Lacquer

An Attractive and Economical Finish

for Metal Cabinets, Tool Boxes, Etc.

Hilo Crystallizing Lacquer imparts an attractive and distinctive appearance to metal and wood products in one coat.

Hilo Crystallizing Lacquer lowers production costs. Fewer undercoats are required because this finish covers and hides all minor imperfections in surfaces. Hilo Black Crystallizing Lacquer is frequently used without undercoats.

Hilo Crystallizing Lacquer is applied like varnish. It may be brushed or sprayed on any hard, non-porous surface or over any other finish—enamel, japan, shellac, lacquer or varnish.

Colors, trade marks, stencilled designs, printing all show effectively thru the clear lacquer.

Try Hilo Crystallizing Lacquer on your product. You will be pleased with the scintillating appearance of this finish and with its economy.

HILO VARNISH CORPORATION

1 GERRY ST., BROOKLYN, N.Y.

Boston Chicago Philadelphia Pittsburgh

Industrial Finishing

An Independent Publication Devoted To The Finishing of Industrial Products

CONTENTS FOR NOVEMBER, 1926

With the Editor 5
Air Compressors for Industrial Finishing Departments, by R. A. Kiefer 9
Finishes at Radio Exposition, by Observer 12
New Mixing and Storage Tanks 14
Costs in the Finishing Room—I, by E. F. Werner 17
The Occasional Brush 19
Painting Modern Oil Equipment, by C. C. Ingleside 20
Expert Finishing of Violins, by Charles W. Gray 24
Automobile Finishes—Luster and Color 28
Questions Metal-lined Hose, by W. H. Martindale 32
Spray Nozzle News 32
Antiquing; Shading; High-Lighting—I, by Chas. Blandford 35
Lye and Aluminum, by John H. Steffen 38
Modern Lacquer Progress, by H. W. Haines 40
Things Worth Knowing About Linseed Oil, by B. M. Z. 42
Selection and Use of Stains, by Robert L. Kent 46
Editorial 54
Sources of New Business.
Improving the Finishing Room.
Finishing Interiors of Furniture, by J. H. Hamilton 58
Finishing Shoe Lasts and Bowling Pins, by Donald A. Hampson 62
Two Associations Merge 66
Baked Finishing Section 67
Enameling Automobile Parts, by Leo J. Smith 69
Making a Tack Rag 71
Overhead Carriers in Paint and Enamel Department, by C. A. Rasey 72
Cadmium Plated Metal, by I. F. 74
Questions and Answers 76
For Exposed Oak Doors, by W. J. Kitley 76
Suitable Piano Dressing, by I. F. and Y. C. Sinclair 76
Lacquer First Coat on Soft Woods, by E. M. Johnson 78
Walnut Gum Filler, by O. L. Toman 79
Why Lacquer Dries Slowly in Spots, by S. C. Mansfield and L. T. Felson 79
Why Does Enamel Check, by I. F. 80
Mixing Shellac, by Carl D. Seymour 81
For That Exposed Oak, by I. F. 82
Stains For Lacquers, by I. F. and Edw. C. Faber 82
Practical Filler Practice, by I. F. and M. B. C. 85
Filler Mixtures 90
Is It Profitable to "Mix Your Own?" 90
Motor Car Wood Mouldings, by I. F. 93
Specific Air Pressure 97

Copyright 1926

Published by Practical Publications, Inc., Room 603, 222 E. Ohio St., Indianapolis, Ind. A. T. Gaumer, President; W. H. Rohr, Vice-President and Managing Editor; R. E. Suits, Secretary; E. A. Dosch, Treasurer. Eastern representative, C. A. Larson, 154 Nassau St., New York, N. Y., phone Beekman 3471. Western representative, Howard L. Watrous, 550 Wrigley Bldg., Chicago, Ills., phone Superior 2429. Missouri representative, G. H. Dirhold, 615 Star Bldg., St. Louis, Mo., phone Garfield 4645. Subscription rates, $1.00 per year in U. S. and possessions; $1.50 per year in Canada and $2.00 per year in foreign countries. Advertising rates on application.

DHRLAK

Gives Your Work a Bright Future

"As good a white as D. H. R." has been the aim in finishes for the past twenty years.

Of the same coverage, durability and ease of application that has made D. H. R. White Undercoat the favorite.

D. H. R. UNDERLAK

has proved its superiority as a tenacious, durable, easy-flowing, non-peeling, smooth underbody for

DHRLAK WHITE LACQUER

on wood, metal and composition.

DHRLAK
Enamel Lacquers
and
Lacquer Undercoats
are made in all colors and finishes, for spray or dip. The finishes are distinctive.

DHRLAK
Clear Lacquers do not blush
For your special requirement there is a special
DHRLAK
clear lacquer.

DENNY, HILBORN & ROSENBACH

PHILADELPHIA

318 W. Washington Street
Chicago

15 East 40th Street
New York City

With the Editor

THIS month the publishers of INDUSTRIAL FINISHING take pleasure in making good certain promises expressed on this page last month, and a year ago when we set forth our Thanksgiving Birthday Greeting to the industry.

Through the splendid support and co-operation of advertisers and readers we have been enabled, during the second year of INDUSTRIAL FINISHING'S existence, to fulfill last year's promise—to add more high-quality pages to the journal and thereby increase its usefulness and service in the industry.

As for the promised surprise, mentioned on this page last month, we are presenting INDUSTRIAL FINISHING in a new front cover design and incorporating a new feature—the BAKED FINISHING section. The addition of this special section is in response to an increasing demand for information about methods, processes, equipment, supplies and materials used in connection with this particular kind of finishing.

Since INDUSTRIAL FINISHING is, as its name implies, devoted exclusively to industrial finishing, and since it now has so many more pages of interest and value, we feel that we can better serve readers and advertisers alike by grouping what pertains to baked finishes, and presenting it in such a manner that it can be more easily found and referred to. In this we are carrying out our original idea of always keeping INDUSTRIAL FINISHING more than ordinarily interesting and convenient for its readers and advertisers, all of whom are busy, progressive people.

W. H. Rohr

Managing Editor

LILLY'S
Better Products

Made by Industrial Finishing Specialists

NITRO LACQUER PEARL

Gives a rubbed varnish effect with lacquer speed at varnish cost.

Write for samples and full information

Lilly Varnish Company

INDIANAPOLIS, IND.

Chicago—275 North California Ave.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

LILLY'S
Better Products

Made by Industrial Finishing Specialists

UNDER LACOTES

Made in all colors, for use under Lacquers to bring up a Lacquer Enamel Finish at low cost.

Write for samples and full information

Lilly Varnish Company

INDIANAPOLIS, IND.

Chicago—275 North California Ave.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

DeVilbiss
Spray-finishing System
Complete Spraying Equipment

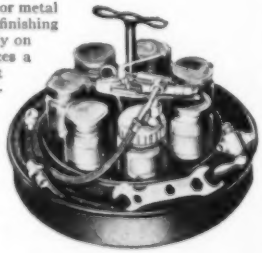
DeVilbiss *Small — Handy Invaluable*
Type C Spray Gun

for (1) stenciling, decorating, high-lighting, blending or shading furniture, lighting fixtures and art objects; (2) coating small parts individually; (3) touch-up work of every description; (4) applying materials on any kind of surface; (5) working to an exceptional degree of fineness and accuracy.

The DeVilbiss Type C Spray Gun, with 6-oz. glass container—or metal if preferred, is one of the handiest tools you can have in the finishing room. . . . The gun fits the hand; the forefinger falls naturally on the trigger; a gentle varying pressure on the trigger produces a spray ranging from the most delicate and finest to the widest used for average coating. . . . Type C Gun is simple in construction, easy to clean, and embodies many of the basic advantageous features of the widely known and used DeVilbiss Type A Spray Gun.

The glass container has a label section sand-blasted on the side on which to write color specifications. Extra containers and a light, convenient tray for holding and carrying them are supplied.

Let us tell you more about the Gun and the complete outfit.



THE DEVILBISS CO. 294 Phillips Ave. TOLEDO, OHIO

New York—Chicago—Detroit—San Francisco—Cleveland—Indianapolis—St. Louis
Milwaukee—Minneapolis—Windsor, Ontario

Learn now what you have always wanted to know about air compressors.

Air Compressors for Industrial Finishing Departments

Director of Sales of Quincy Compressor Co.—an experienced and well-informed engineer—gives practical and timely instructions on the selection, installation, care and operation of modern air compressors

By R. A. Kiefer

THE rapid growth in the use of the air brush in industrial finishing would almost justify the prediction that, in the not very distant future, the old method of hand brushing will be practically displaced.

The air compressor being a very important part of paint spraying equipment, a few suggestions as to its selection and care may be timely.

Selection of Compressor

First, be sure to select a compressor of sufficient capacity, both as to volume as well as pressure. This must be determined from the number and type of air brushes to be used, as different makes of brushes require varying volumes and pressures of air. The manufacturers of the air brushes will give this information, as a rule, in their advertising literature.

If the brush selected requires, say 5-cu.ft. of air per minute, do not install an air compressor rated at 5 or even 6-cu.ft. per minute displacement, for the reason that the air compressors are rated at their displacement capacity, which means the volume of the cylinder displacement times the revolutions per minute. The air actually delivered varies considerably in different makes of compressors and, also in all compressors, with the pressure—the higher the pressure, the lower the efficiency. For a single-stage compressor, an efficiency for small sizes of from 65 to 75 percent at 80-lbs. pressure will not be far amiss.

Installation Pointers

When installing an air compressor, put it in as cool and clean a place as possible. Never locate a compressor in the line of the spray, as if so placed, there will be more or less of the spraying medium drawn into the crank case, through the breather openings, and this will mix with the lubricating oil which will, as a result, soon become thick, viscid and unfit for lubricating; in consequence the bearings will wear and the cylinder and piston will be scored, if not entirely ruined.

If air at the compressor is full of dust, then pipe the suction intake to the outside, or to some other place where the air taken in will be free from any dust or grit. If the pipe is more than 10-ft. long, increase its size to

the next size larger than the suction opening of compressor. If it extends outside, invert the end of pipe and place a screen over the opening to prevent leaves, paper or other light material from being drawn into the line.

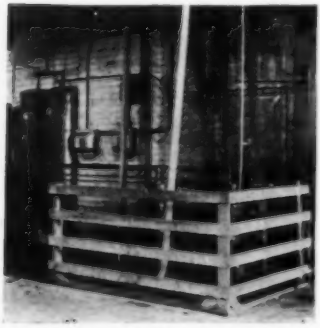
Keep Your Instructions

All air compressor manufacturers send instructions with each compressor regarding lubrication, installation and care. Do not destroy these or throw them away. Read them carefully! It will pay you, as they are sent with the machine for your benefit. Preserve them for future reference.

Lubrication

If your compressor is of the splash lubricating type, be sure to fill crank case to the level designated, using the correct grade of oil. Most large oil companies now market an air-compressor oil, but if this is not obtainable, a good grade of gas engine oil will answer the purpose. The light grade is generally satisfactory in some compressors, although a medium grade will be found preferable in summer time.

With adjustments made as soon as required, and with proper lubrication, most compressors will give good service.



Sometimes a twin installation is advisable, but the majority of concerns perfer to have but one stationary compressor.

A word regarding heat and moisture, to those who have had no previous experience with air compressors.

Compressor Heat

When compressing air to say 80-lbs. per sq.in., the temperature of the compressed air will be, theoretically, 432-deg. F., and at 125-lbs. pressure, 540-deg. F. Temperatures given above are without deduction for the small amount of heat which is given off during compression. Much of this heat is also given off by air in passing to the receiver, and the temperature of the air in the receiver will be very much lower.

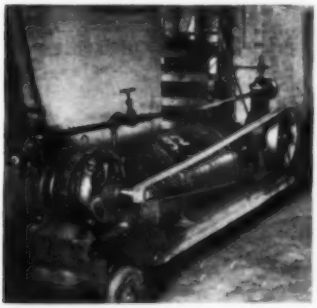
This heat will be most noticeable at the discharge opening of compressor and it is in no way indicative of improper functioning of the compressor. Bearings, however, should remain reasonably cool, as an over-heated bearing will soon give trouble.

The Moisture Problem

Sometimes there is a complaint regarding moisture. In an air-cooled compressor, there is no chance for any moisture to get into the air being compressed, other than that which is in suspension in the atmosphere, and when compression takes place, this is precipitated.

Air at 60-deg. F., and a relative humidity of 100, will carry approximately 5.87 grains of water per cubic foot of free air. Also, a small amount of oil vapor will be carried by the hot compressed air into the air receiver, and more or less of this will be carried from the receiver to the spray gun.

With most finishes, even a very



A portable outfit is useful for factory cleaning purposes and, in emergencies, for production work.

small quantity of moisture is objectionable, therefore a separator should be placed in the air line coming from air receiver to the brush. This equipment can be, and usually is, supplied by the manufacturer of the air brush.

Two Units or One

As a general rule we may be safe in saying that where continuous operation of the plant is imperative, it is well to have two units (two compressors), not necessarily both of them large enough to take care of the maximum requirements, but large enough to take care of the contingency requirements in case either one of them breaks down, to avoid shutting down the entire plant.

Cost of current or motive power is another factor that would influence the decision. Where the charges are based on peak load, it may be just as well as to operate one compressor unloaded as it would be to go to the expense of putting in two units.

In most plants, for cleaning machines, benches and even dust and dirt off rafters and window sills where it accumulates, it is quite convenient to have a small portable compressor, for as a usual thing cleaning does not require the same pressure as spraying or operating pneumatic tools. For cleaning motors, for instance, I have found that a pressure of 40-lbs. is most economical and efficient, all things considered.

Yarnall Paint Co. Erect New Building

The Yarnall Paint Co., now located at 1026 Race St., Philadelphia, is erecting a three story steel and reinforced concrete building at 56th & Grays Ave., Philadelphia. Every modern device for prompt handling of paint materials will be installed in the building, and the production capacity will be materially increased.

The Yarnall Paint Co. has felt the need of enlarged quarters for some time, and naturally the concern will be able to handle even more promptly, the requirements of their customers when the new building is completed.

Lacquer Polishing Cloth

"Lacquer Cloth made by Adler, Cincinnati, Ohio" is the title under which a knitted cloth for lacquer polishing is to be registered by the Adler Underwear and Hosiery Mfg. Co.

In April, this year, the engineer of a large body factory called in consultation one of the representatives of the knitting company to produce a cloth which would be particularly adapted for lacquer-finished bodies. Several samples were made and finally a special combination of yarn and knitting produced a fabric that just suited the requirements of this engineer.

The cloth was at first called "Lacquer Cloth" but because this name could not be registered, it is now being distributed and it is the intention of the company to register it under the name of "Lacquer Cloth made by Adler, Cincinnati, Ohio."

The cloth is said to serve a new purpose in that this particular weave absorbs and holds the polish better and longer than the ordinary knitted beef cloth used for polishing purposes. Because of its peculiar weave this cloth, when used dry as a finisher, is said to give a better polish than the old-style loose-knit cloth. It can be rewashed and used over again a great number of times.

Finishes at Radio Exposition

Notes on designs, finishes and color combinations of radio cabinets exhibited by radio cabinet manufacturers last month in the Second Annual Southwest Radio Show at St. Louis

By Observer

THE SECOND annual Southwest National Radio Exposition presented recently in St. Louis contained exhibits from 121 manufacturers and jobbers of radio sets in the country. The increasing importance of St. Louis as an exposition city, ranking with the Chicago and New York shows, enabled a presentation of almost everything new in radio.

Fine Furniture Now

One of the outstanding features of the show is the fine furniture in which manufacturers are now housing their receivers. The mechanical appearance of the early receivers has been largely replaced by beautiful cabinets, which can function as a decorative element in the home. This better appearance and the greater simplicity of operation is calculated to convert many a hesitant purchaser who has been skeptical as to the mechanical aspect of radio. The surprising feature of the exhibits was the range in prices, varying from a few dollars to sets retailing for over $1,000 each.

The trend toward beautiful furniture for the housing of radio receivers is largely due to the fact that this year there is nothing particularly new in circuits. Standardization in radio circuits has done much to turn the attention of the set manufacturer to the beautification of the cabinet itself, thereby enabling the radio fan to have a cabinet in any part of the home, and to know that it will not be out of place.

The sizes and shapes in new radio cabinets range from console cabinets, treasure chest cabinets, deluxe art cabinets, highboys and hand-carved period cabinets, down to the simple little box-like affairs that many of us visualize when we think of a radio outfit.

Principal Finishes Shown

Every radio manufacturer present showed various models and designs, such as simple American walnut finish on gum, two-tone walnut effects, medium mahogany on gum and the new crackled finish; also the genuine walnut, and a few pieces of genuine mahogany.

The exhibit of the Radio-Master line of cabinets showed consoles, tables and highboys, the finish being straight-grained stripe mahogany, walnut with curley-maple overlay, walnut with genuine crotch overlay, walnut with zigzag moulding and burl overlay, and richly-figured and shaded butt walnut. The legs varied, from simple turnings to those with elaborate carving and fluting, all finished in highly-polished piano finish.

Attractive Combinations

The United Cabinet Manufacturers' Cabinet Corporation showed a striking example of the cabinet-maker's art, with a deep, velvety-brown, high-lighted finish

and a wealth of natural graining. It is of the console type and period design, and is made of genuine walnut, hand decorated.

Another cabinet by the same company is made of walnut plywood, with a butt walnut front. The overlay on the grill is birdseye maple. The drop door has genuine inlay, finished in highlighted walnut, the tops and doors being edge banded.

The exhibit of the A. C. Dayton Radio featured a console type as well as the standard small unit, all finishes being hand-rubbed, piano finish in various walnut and mahogany shades. One model, especially, stood out on account of the clear beauty of its walnut grain, the range of blended tones of light and dark, and the character of its fittings. The panel on the standard models is gold engrained bakelite.

Blended walnut finish base; cabinet, blended walnut-brown, crackle-parchment finish on gold background. Embossed floral decorations.

The Oriel Radio receivers were all finished in transparent grain back walnut with special high light effects. The consolette model would fit very well into any living room.

The Blanden exhibit also featured consoles and tables. Their Versailles console is built of quarter-sawed gum wood, heavily lacquered and finished in rich tones of walnut, with ebony decorations and antique-glazed carvings.

The Radio Corporation of America, Atwater Kent Mfg. Co., and many others had splendid exhibits which showed a wide range in sizes and prices to fit every purse. The finishes, as a rule, are in subdued colors, some two-tone effects and with walnut predominating.

The Ranland Corporation featured a number of high grade cabinets, the one reproduced here —the "Sovereign"—having a blended walnut finished base, the cabinet a blended, walnut-brown, crackled-parchment finish on gold background with highly-embossed floral decorations. Their Lorainne model is a beautiful cabinet finished in blended-grain crackled lacquer.

The exhibit of the Federal Electric Co. featured two models, one showing a highly-decorated, Chinese-lacquer effect, inside and out; the other is genuine walnut. Both are richly finished and highly polished.

Radio Speakers

Loud speakers and soft speakers came in for much prominence in regard to finishes. The Teltone Radio Speaker is completely made of violin wood, giving an appearance of dignified beauty traced in rich wood grains and blending in with the surroundings and furnishings of any modern

living room. Its rich finish in either American black walnut or genuine ribbed African mahogany, blends with any setting.

The Gemco Speakers consisted of a pedestal type, a mantle drum type, a mantle clock type, and the well-known giant gooseneck type. One of the striking mantle-clock types is finished in a combination red lacquer and decorated with a beautiful gold design in a Chinese effect. The outlet of the amplifying chamber is covered with a gold cloth over wire mesh. The other types of speakers are finished in pleasing combinations of green lacquer and gold, black lacquer and gold, with and without floral designs; also in the regular two-tone walnut effect.

The Orchestrion Pedestal Speaker, built by the Radio Cabinet Co., stands approximately 29-in. high and is finished in Chinese blue, red, jade, yellow and black crackle, as well as in Japanese black and gold.

The Saal Pedestal Speaker has a highly-polished American walnut finish in combination with gold grill cloth. Many other beautiful combinations were shown, the quality of finish doing credit for any high-grade furniture exposition. Lacquer finishes were in the majority by far, although several exhibitors emphasized the point that their cabinets had a rubbed varnish finish.

The final dominating thought carried away by those who attended the exposition, is this: that the radio of today and of the future is not to be put aside in the workshop, in the attic, or behind the kitchen stove. Rather it has come to take its place with high-grade furniture and pianos, making a valuable asset to any room.

New Mixing and Storage Tanks

For the purpose of providing a convenient, air-tight, fireproof container from which finishing materials can be drawn quickly and easily, and which at the same time serves for storing, mixing and agitating materials used, R. L. Vilas, of New Haven, Conn., has brought out a type of mixing tank such as that illustrated herewith.

Interior of tank has central shaft on which are mounted adjustable aluminum paddles.

The tank is cylindrical in form and stands upright. It is made of sheet metal and contains cast aluminum paddles mounted in such a way that they can be turned with a crank on the outside. Tanks are furnished with or without mixing paddles and crank, but all are fitted with Sargent & Co. leak-proof gate valves for drawing out materials. All bearings are bronze. The tank is easily cleaned when a change of material is desired.

These tanks are suitable for lacquers, enamels, paints, etc., and are made in three sizes, namely, 1½, 5 and 15 gallons capacity. Dimensions of tanks in these respective sizes are 7½x 16-in., 13x21-in. and 16x31-in.

Finishers call it

"ANOTHER LUCKY FIND"

FLINT FLAT FINISH

"An Improved Flat Varnish"

IT DOES	IT DOES NOT
Spray Freely	Skin Over
Dry to a Durable Film	Settle
Reduce Rubbing Costs	Become Brittle
Produce a Real Rubbed Effect	Vary in Lustre

Manufactured and backed by an organization with 81 years experience in making industrial finishes, whose unchanging policy has been thoroughly to test and perfect any new product before selling it to the trade.

Order a working sample or five gallons at the drum price

All Clover Leaf products are sold subject to the approval of the purchaser

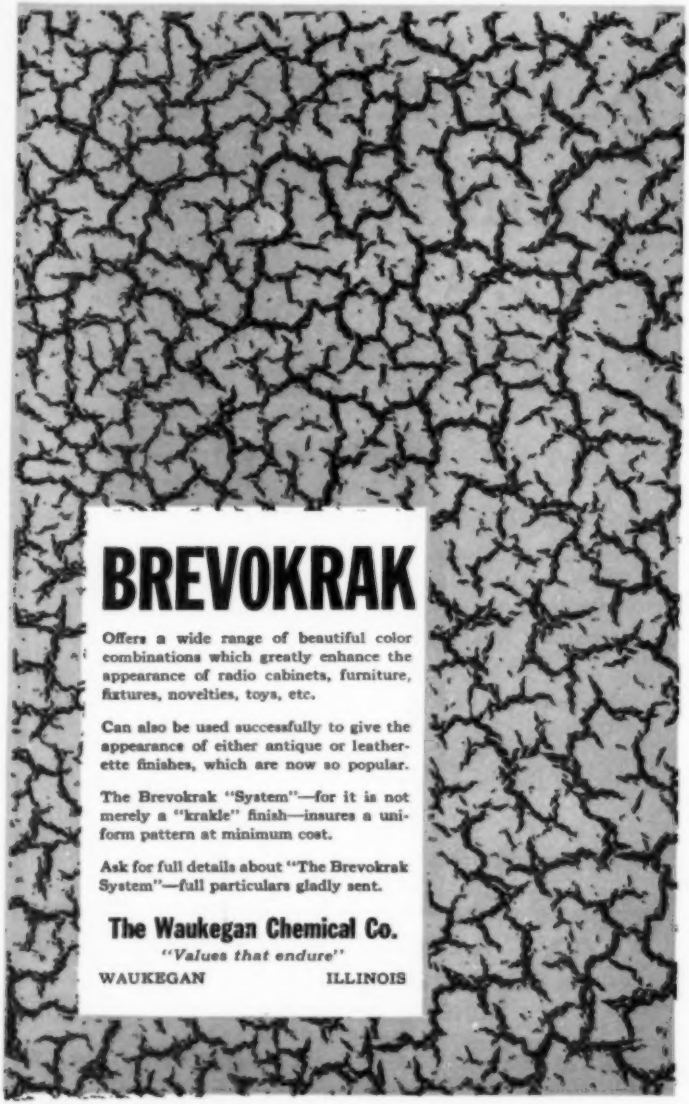
MAYER & LOEWENSTEIN

Manufacturing Specialists since 1846

LONG ISLAND CITY, N. Y.

43-43 VERNON BOULEVARD

VARNISHES ENAMELS - LACQUERS - JAPANS


BREVOKRAK
Offers a wide range of beautiful color combinations which greatly enhance the appearance of radio cabinets, furniture, fixtures, novelties, toys, etc.
Can also be used successfully to give the appearance of either antique or leatherette finishes, which are now so popular.
The Brevokrak "System"—for it is not merely a "krakle" finish—insures a uniform pattern at minimum cost.
Ask for full details about "The Brevokrak System"—full particulars gladly sent.
The Waukegan Chemical Co.
"Values that endure"
WAUKEGAN ILLINOIS

Know your finishing costs on each article and for each operation.

Costs in the Finishing Room—I

First installment of a series of articles in which the author takes up finishing costs and labor-payment plans in a practical and fair-minded way

By E. F. Werner

THE average foreman does not know the actual cost of production in the finishing room. This statement is made with full realization that a storm of protest will probably arise and that each foreman finisher, as he reads this article, will say "that does not apply to me because I know my costs."

But does he know his costs? I have spoken to a number of foremen in the various plants which I have visited, have discussed the different methods used, and have come away more firmly convinced than ever that my original statement is correct.

Test Runs

In many plants, test runs are made to get at the average cost. In this method, a certain quantity is designated for the test. Accurate quantities of material are measured out, time is kept for the various operations, and the total time and material are figured in as the cost for the run. Whenever cost information is needed, these figures are used.

There are some things and conditions that have not been considered when cost information is based on test runs. Will the same speed obtain in running future lots, as was done when the foreman and his men knew that a close check was being made on the particular batch in question? How are the delays going to be calculated—for example, when the man goes to the washroom, or when the spray gun jams—and to what are they going to be charged? What is going to be charged when refinishing is necessary? How about goods damaged in the finishing room?

These are only a few of the many questions to be considered, not counting that old reliable bugaboo, "overhead." Overhead or "burden," as it is often called, will be treated separately from the costs now being considered.

Acknowledgment

In considering compensation methods in this article, some of the information obtained and certain methods were gathered from lectures and facts as outlined by Mr. C. B. Auel, Director of Standards, Processes and Materials, Westinghouse Electric & Mfg. Co., and then checked against our own experience.

There are several viewpoints to be considered. First, the effect the compensation will have on the cost of production; secondly, its effect on the workmen and also the possibility of applying the particular compensation scheme to the work involved.

In the finishing room, attention must be given the equipment,

such as spray guns, power rubbing machines, ventilating equipment, lighting and heating, because if any of the equipment is inferior, old-fashioned or badly in need of repairs, the finisher can not be expected to turn out work as speedily or as high in quality as the man who has the latest up-to-date equipment in first-class running order.

Day Work

Day work is the oldest form of wage payment, and it is probably the most extensively used plan of payment today. Where work is recurrent, records can be obtained and standards set in such manner that skilled workers can be paid rates above the average. The special compensation is not automatically applied and, due to neglect or oversight on the part of the foreman, the men often are not paid in proportion to their skill and efforts.

The advantages of day work lie in the small expense incurred, the simplicity of making out the payroll, and the supposedly higher standard of work, which, however, does not always hold true. The disadvantages are the tendency for some of the men to deliver just enough work "to get by," and the lower production, which is always revealed when piece rates or some similar incentive system is put in.

In attempting to figure labor costs, the methods are more complicated than piece work. Day work is the logical payment system to use in a finishing room where the work is continually changing in character and is always in small-quantity runs. It also serves well for repair jobs, or in small shops where the head of the department is an active worker, keeping strict supervision over the other men.

Piece Work

Straight piece work is the next oldest system of wage payment. It is based solely upon the number of completed pieces, multiplied by the price per piece. The direct labor saving goes to the man, but the company gets the benefit of increased production and the lowering of overhead charges per piece. The great danger in piece rates is the first change from day work. No accurate figures exist, and the rate of pay usually set is based mostly on guess work.

It has been proved that the output based on day work is approximately 65 percent of that based on piece prices, and care must be exercised in setting the rates so as to be fair to the man and the company. If the rate is too high the finisher derives more benefit than the company. This eventually results in price cutting, which has an immediate tendency to limit the workman's efforts to an amount which will not give rise to another cut in rates.

In a majority of plants there is a distinct tendency among workmen to protect their prices by nursing the good jobs. On the other hand, if the prices are set low to begin with, fair wages are only obtained by the fast and skilled finishers.

Experience has shown that if piece work is to be a success, low prices must be raised, but high prices cannot be lowered unless the method of finishing is changed. This rule can be modified by guaranteeing all the rates for a definite period of time.

Another disadvantage of straight piece work is that it fails

to take account of the varying price of labor. As a result, when business is good it is natural for men to prefer the higher day wages in another shop, and when times are bad the manufacturer cannot take advantage of the lower day rates set by his competitors. Piece work cannot be regulated like day work; it remains fixed, regardless of the skill and rate of the man.

The advantage of piece work is that it is very easy to make up payroll records and secure costs, while the actual labor cost per piece is known ahead of time.

Other Systems

There are a number of other systems, such as the Taylor differential piece work, group method, contract work, Halsey premium plan, Emerson efficiency system, but with the exception of the Halsey premium plan, which has been used at one of the plants for a considerable length of time, too much time would be taken in describing the various systems.

In determining the method to be followed in setting rates for piece work, care must be taken to analyze the entire procedure, so as to determine the amount of time consumed in the various operations. This investigation is called "Time Study," and is really timekeeping on a scientific basis.

Time study is not made just to find out how long it takes for some particular job, but rather to tear the different operations to pieces so that knowledge may be had of the various steps entering into the work. In this manner it is possible to analyze new work and figure very closely how much certain new jobs should cost.

In every job a certain length of time is spent "getting ready." It is surprising how long this takes, often running as high as 15 to 25 percent on short jobs.

Editor's Note: Next month Mr. Werner will explain in detail how piece work rates were set in a certain finishing department.

The Occasional Brush

Where a brush is used occasionally and is put away for future use, it is well to observe the following rule: If used in paint, enamel or ordinary varnish, clean the brush thoroughly with turpentine and then wash it well in soap and water, straighten out the bristles and wrap carefully in paper.

If a brush has been used in shellac or material made with alcohol, follow the same rule but use denatured alcohol in place of turpentine for cleaning. Badger and ox hair flowing brushes are very expensive and should have special care. They should be carefully cleaned with kerosene or benzine, then thoroughly washed with soap and water and suspended in a brush keeper.

For small shops and where space is at a premium, the portable type of spray gun outfits are ideal and convenient.

Pylamet Colors Announced

Pylam Products Co., 799 Greenwich St., New York City, announce that experiments are almost completed on the Pylamet colors, a line of aniline dyes which are soluble in alcohol and insoluble in water. These colors are fast to water, moisture and perspiration. They are therefore adaptable for toys and garden stakes, as well as all other wood which comes in contact with water or moisture.

Pylam Products Co. manufactures Pylakrom stains, which are aniline stains that are fast to light. They come in three classes, for water, alcohol and oil.

Painting Modern Oil Equipment

These recommended materials and methods are based on the results of long experience in the use of protective and decorative coatings for oil-producing, refining and distributing equipment

By C. C. Ingleside

THE OIL producing, refining and distributing industry has grown to be one of the largest in the country, and the problems connected with the finishing and maintaining of the equipment are numerous and varied. Conditions under which the equipment is used are very severe and it pays to use only the very best of finishing materials.

Conditions Severe

Stations and buildings are usually constructed of wood, iron, brick or concrete. Wooden buildings should be painted with long oil, durable exterior paints which are so constructed as to withstand the various climatic conditions throughout the country—and these run the entire gamut from the hottest summer sun of the south to the extreme cold and ice of the north.

Lead and oil paint of the best quality will work well under these conditions, as will a number of standard makes of ready prepared paint. On old work little or no thinning will be required, but on new wood a pint of raw linseed oil should be added to each gallon of paint, as well as a little turpentine, if needed.

Galvanized Iron

New galvanized iron buildings should be given a coat of 6-oz. of copper acetate dissolved in a gallon of hot water, to remove the greasy condition of the metal and prepare it for the paint. The solution should be allowed to dry, after which the surface can be treated as though it were bare iron. Iron structures should receive a coat of elastic primer which possesses good adhesive and elastic properties. A long-

oil primer containing red oxide of iron works well for this purpose. After this primer coat is dry, regular exterior paints can be used for the finishing coats.

Building Materials

New plaster, cement or brick work should be treated with a solution of two pounds of sulphate of zinc to one gallon of water. This will neutralize the alkali, and it should be allowed to dry before proceeding. Regular exterior paints or specially prepared paints for this class of work can be used for the finishing coats.

Interior plastered walls can be finished with flat wall paint. Concrete floors should be finished with paints made especially for use on concrete floors. Interior woodwork in buildings can be stained and varnished or finished with a coat of primer and two or more coats of interior enamel.

Oil tank trucks are subjected to severe conditions, since they not only are exposed to the weather but also are frequently splashed with gasoline, kerosene or lubricating oil. New tank trucks should be finished with a good grade of oil primer, followed by the necessary coats of surfacer and durable enamels or varnishes to give a finish of the smoothness and luster desired. Many paint and varnish companies manufacture enamels especially for this use, and these materials withstand the action of gasoline and oils as well as severe weather exposure.

Trucks and Pumps

Old tank trucks should be washed free of oil, grease and dirt before refinishing begins. It is often advisable also to sand the old finish to a smooth surface. The new finish can be brought up with enamels similar to those referred to in the previous paragraph, or with color varnish and a gasoline-resisting clear varnish.

Oil machinery and pumps come in close contact with oils and greases and the finish should be especially made to meet these requirements. Curb service pumps, which are exposed to outside weather conditions, should be coated with enamels that resist weather exposure as well as oil and grease. Enamels for this purpose should dry quite rapidly so the refinishing operations will not tie up the equipment long.

Tank Cars

Tank cars in which gasoline, kerosene, oils and similar products are shipped meet unusually hard wear. Not only is the finish subjected to extremes of temperature and to spilled gasoline and oils, but also there is considerable friction due to workmen climbing over the cars at the time of filling and unloading. Likewise there is considerable vibration from unevenness in the road bed, and friction from flying cinders and dust while the car is in transit. Paints for tank cars should be specially formulated to meet these severe conditions.

Field Tanks

Field storage tanks were formerly painted with regular exterior paints of various colors, but it was soon discovered that those tanks painted in lighter colors lost less gasoline by evaporation than those painted in darker colors. Further tests have shown that tanks finished with aluminum bronze remain cooler than when finished with the lightest colored paints.

Certain aluminum bronze pow-

ders sometimes lose their good qualities when allowed to stand for some time in contact with the bronzing liquid, and when there is any possibility of this fault developing it is better to mix the powders and liquid shortly before they are used. The varnish used for mixing with the powders should be very durable and carefully formulated so as to give maximum floating qualities to the aluminum bronze powders.

Drums and Barrels

It is good business to keep the barrels and drums in which smaller deliveries are made, well painted. Paints made especially for use on barrels and drums are now obtainable. These are low in cost, yet they have remarkable toughness and durability to stand the hard knocks which the containers receive in service.

Pipe Lines

Around refineries and storage tanks, where a large number of pipes are in use to handle the various materials, it is advisable to paint each pipe line a distinct color according to the material pumped through it. This will often prevent mistakes in opening the wrong line when a particular material is wanted. Such pipe-line enamels should be durable and of distinct shades so as not to be easily confused with other colors.

J. H. McNulty Dies After Auto Accident

Succumbing to injuries received Oct. 16, when another automobile crashed into his coupe near Buffalo, James H. McNulty, president of Pratt & Lambert-Inc., banker, active figure in civic affairs and one of the foremost men in the paint and varnish industry, died at the Sisters' Hospital Oct. 17.

Besides his wife, Mrs. Harriet Wallace McNulty, and three daughters, Mr. McNulty is survived by a brother, Byron McNulty of Los Angeles, Calif., and a sister, Mrs. Philip Eltinge of Chicago. The funeral was held from St. Joseph's cathedral, at 10 o'clock Wednesday morning, with interment at Forest Lawn, Buffalo.

James Henry McNulty was born in Chicago, August 31, 1873, the son of Mary and Martin McNulty. He has been nationally identified with the varnish business for 35 years and was highly regarded as one of the most prominent and progressive men in the industry. He was elected president of the National Varnish Manufacturers' Association in 1914, and has ever been active in all constructive measures affecting the industry.

Mr. McNulty's first position with Pratt & Lambert-Inc., was in 1892, and he has been with the same concern ever since. He started at the Chicago office, as general office man and bookkeeper. When only 22 he became resident manager of the plant in Chicago. Several years later Mr. McNulty was appointed secretary and sales manager of Pratt & Lambert-Inc. In 1902, when the company built its main plant in Buffalo, N. Y., and moved the principal office from New York City to Buffalo, Mr. McNulty came east as secretary and assistant general manager. In 1907 Mr. McNulty became treasurer and general manager of the company, and in January, 1917 he was elected its president.

Mr. McNulty was a director of the Marine Trust Co. of Buffalo, the Pierce Arrow Motor Car Co. and numerous other business concerns. For the past two years he has been chairman, joint committee, American Tung Oil Corporation. In 1925 he was appointed director of the Buffalo Federal Reserve Bank of New York.

In his death, the paint and varnish industry loses one of its leading factors—a man of ideals and practical achievement, who at all times manifested an intense interest in the field to which he had devoted his life. He was public spirited and gave much of his time to the furtherance of civic matters in Buffalo. He was a member of the Buffalo Chamber of Commerce and the Council of the University of Buffalo.

Atlantic Enamel & Lacquer Works

The Atlantic Enamel & Lacquer Works, Inc., 75 West St., New York City, is a new organization entering the industrial and dealer lacquer field, and Mr. L. Kane, formerly in charge of brushing lacquer sales for The Zapon Co., has been appointed general sales manager in charge of both industrial and dealer sales.

Armitage ARMORLAC LACQUER SYSTEM

Attractive—Durable—Uniform

Affords maximum beauty of finish at minimum production cost.

Not for a day, nor a month—but for a surprisingly long time, ARMORLAC retains its lustre and beauty. It is the final finish wherever used—for wood or metal.

Be satisfied with nothing less—ARMORLAC, a lacquer made by one of the oldest manufacturers in the United States.

We solicit your inquiries.

John L. Armitage & Co.

Est. 1876

NEWARK, N. J.

Varnishes--Lacquers--Japans

Copies of Dolphin Stradivarius, made by Chas. W. Gray, Brisben, N. Y.

Expert Finishing of Violins

An expert and skillful violin finisher of 40 years experience reveals many interesting and practical notes on this very exacting class of wood finishing

By Charles W. Gray

THE VARNISH used by most makers of high grade violins is an oil varnish made especially for violins. This is made of various hard and tender gums such as mastic, copal and elemi, and a drying linseed oil prepared by a special process and combined with ozonized turpentine.*

I will not give a formula here because varnish making is a trade in itself and I would not advise any violin maker to attempt to compound his own varnishes, as the process is tedious and dangerous to any one but an experienced chemist, and it requires costly apparatus to get best results. I have known of several serious accidents through amateur violin makers attempting to make varnish.

Old Practice and New

I learned about violin-varnish making many years ago as an essential part of the trade, but now there are excellent violin varnishes on the market. I have mine made by varnish makers according to my own formula, about 10 or 12 years in advance of the time I expect to use it, as it is best when thoroughly aged.

There is also a special dryer made for the varnish and this is not mixed with the varnish until ready for use. The varnish is made in various colors such as red, brown, orange and yellow, as well as clear varnish. Any desired shade can be obtained by mixing the various colors. The varnish should be made much thinner than ordinary furniture varnishes, and from four to eight coats are necessary to get an even color and surface, rubbing down after the application of each coat with fine pumice and water.

Special Fillers

The filler generally used is gamboge and alcohol, and is prepared as follows: Fill a bottle

* Meaning exposed to the air in an open container for about three months.

Brown Lacquer Glazing

Our method of shading with Brown Lacquer Glazing not only makes the antiquing of furniture easy, but imparts to it that soft evenness of tone that is so desired.

Following this method with Gravarco 1009 Clear Lacquer and Gravarco 1022 Flat Lacquer produces the most durable and economical finish possible to obtain.

There is no question but that we can be of assistance to you in your finishing department. Will you call on us to prove it?

What is Your Problem?

GRAND RAPIDS VARNISH CORPORATION

GRAND RAPIDS, MICH.

about one-fourth full with the powdered gamboge. Then add alcohol until the bottle is three-fourths full. Set the bottle in a warm place and shake frequently during a period of 8 or 10 days. Pour off the clear liquid and repeat this process, using the clear liquid instead of alcohol. Apply with camel's hair brush; let dry for about two hours and sand lightly with No. 000,000 or No. 0,000,000 garnet paper.

A little dragon's blood may be added to the gamboge solution if a deeper shade is desired, but be careful with dragon's blood! It is a powerful color and too much of it will darken the filler to such an extent that it will be difficult to apply evenly.

Another filling process which has been recommended by a prominent violin maker consists in rubbing dry, finely-powdered gum mastic, sandarac or Canadian balsam into the pores of the wood with a piece of felt. It is claimed that this adds brilliancy to the tone, but personally I have not experimented with it long enough to be able to endorse this statement.

Sanding the Surface

The preparation of the surface for varnishing is very important. The surface of the violin should be sponged with water to raise the grain at least four times and sanded after each sponging, starting with No. 00 garnet paper and finishing with No. 000,000 paper.

Before the last sanding, go over the violin carefully and fill up every little hole and depression in the surface with transparent stick shellac, using an alcohol lamp and heated knife; or better still, make three or four little tools of heavy copper wire, setting them in suitable handles and shaping the ends to suit the work—for example, a pointed end for filling pinholes, a chisel-shaped end for filling cracks, etc.

Brushes and Temperatures

Most violin makers use a one-inch flat fitch brush for oil varnish, but personally I prefer a camel's hair brush and the beginner will do well to start in using a five-eighths inch flat brush with round handle.

The temperature of the room, violin and varnish should never be less than 70-degs., and 80-degs. is better. A small ointment jar is a good container for the varnish. Do not wip the brush on the edge of the cup every time you fill the brush. Practice taking up just the right quantity of varnish every time you dip in the brush.

Put a pine plug about 6-in. long in the end-pin hole of the violin to rest on bench while varnishing. Start with the scroll, then the ribs, the back next and finish up with the top. Then insert the plug end in end-hole, in a block of wood in which a hole has been bored at an angle of 45-degs. and attached to the wall as high up as possible. Leave it there until you can hold your thumb on the varnish for one minute without sticking. It may require four or five days and sometimes two weeks, depending on the weather and the amount of dryer used, but don't try to rush the job.

Shop Notes

Never apply a coat of varnish on damp or rainy days. If you are using colored varnish do not use too strong a color, but rather build up your color by repeated coats. It requires years of prac-

FLAT OIL FINISH

The ideal drawer and inside finish.

Made in natural colors or any color desired.

No filling—no sanding—just spray two coats and the job is complete.

Feels like velvet—looks like it was oil rubbed.

Dries within one hour.

Advance Paint Co.

Manufacturers of

Wood Finishing Materials

INDIANAPOLIS, IND.—*factories*—EVANSVILLE, IND.

Saves more than it costs

Let us show you what a beautiful interior finish this makes by having our special representative demonstrate its wonderful labor-saving and business-building qualities.

tice to be able to flow on a coat of strongly colored varnish so that the color will be perfectly even, and the beginner will invariably make a mess of it. Look out for sags and runs. When varnishing around the ff sound holes, draw the brush towards the holes, never across them, or you will have trouble.

Keep an even smooth surface between coats and when the final coat is on, let it dry for three or four weeks and rub to a perfectly smooth surface with a felt pad, using fine pumice and water. Let dry a few days and finish up with rottenstone and water, which is best applied with the fingers and palm of the hand. Then hang up the violin and let it dry some more before stringing it.

This reads like a long, tedious process, and it is; but there is no other alternative if you are interested in strictly high class work. If you use a hard, quick-drying varnish, you will have a harsh, unpleasant tone in the violin.

No Amateur's Job

In case a man has no knowledge of varnishing and only one or two violins to be finished, I advise him to turn the job over to a professional, instead of attempting to do it himself.

During my nearly forty years' experience as a violin maker and repairer, I have refinished several hundred violins on which amateurs have made a botch job.

The neck of the violin is generally finished by French polishing, but I find that an excellent and very durable finish can be secured with the new brushing lacquers now on the market. For those not expert in the art of French polishing I would recommend the lacquer.

Note to Editor: You are at liberty to revise, correct, delete and do other things to the above, as I am rushed with repair work and have written it in haste. I have received so many excellent hints from the writings of others in your helpful little journal that I felt it my duty to do my bit in helping others.—Chas. W. Gray.

Automobile Finishes—Luster and Color

A tradition connected with the coloring of automobile bodies, which is now almost a law, is the creation of a shiny outer surface and as smooth as possible. With the development of the lacquers came the fight to kill the orange-peel effect and the development of abrasives to bring the luster to the same intensity as that of varnish. However, opinions have been expressed by men of arts, not connected with the automobile, to the effect that the orange-peel appearances could be made into an attractive finish, perhaps more artistic than a smooth one.

The proper use of color in most arts is complicated but in automobile work it is simple, for the effects are limited. It is enough to know that there are "warm" and "cold" colors possessing different properties, that when two colors on one side of the chromatic circle are mixed together they produce a harmony, and that colors on one side of the circle contrast with those directly opposite.

Warm colors, red and yellow, or any combination in which these strongly predominate, make surfaces look larger than they are or rather larger than the same surfaces painted with cold colors, such as blue or combinations in which it predominates. Warm colors are suggestive of cheerfulness and life; cold colors

Vitraloid Wood Lacquer No. 2546

THE increased output of the modern furniture factory demands the use of cellulose lacquers to secure in the minimum time various wood finishing effects.

Is Printproof and Waterproof

Vitraloid Wood Lacquer No. 2546 is completely resistant to the action of printing and moisture. Whether used to produce the popular antique effect or the full-bodied finish like a rubbing varnish job, a durable, long-lasting finish is assured. Its use simplifies finishing methods, makes it possible to maintain a quick production schedule, and it costs no more than a good rubbing varnish.

We would like to send you a generous no-charge sample of Vitraloid Wood Lacquer No. 2546 and tell you more about this material. If you use varnish or lacquer, may we not help you with your wood finishing problems? Write us today.

PRATT & LAMBERT - INC.

Manufacturers of

Varnishes Enamels Lacquers

84 Tonawanda St., Buffalo, N.Y.

New York Buffalo Chicago San Francisco

Bridgeburg, Ontario

express calmness and tranquility.

It is always wise to avoid large areas of an even color for they tire the optic nerve transmitting the sensations and become displeasing. In connection with this the bead has played an important part, for it has contributed to reduce the color area of the lower structure in the most suitable way to the design, that is with horizontal divisions. It has also made it possible to establish if desired a harmony of three colors, the color of the bead itself and the stripes being sufficient to provide the necessary contrast.—Autobody.

Varnish, as we know it today, is probably as old as the Oriental lacquer, although the records are not so conclusive.

W. N. Matthews Sales Organization Enlarged

The W. N. Matthews Corporation have recently added considerably to their Mechanical Painting Equipment sales organization, and have opened offices at the following addresses:

Mr. W. W. Rhodes, 502 Delta Bldg., Los Angeles, Calif.

Mr. R. L. Stevens, 2945 1st Ave., South, Seattle, Washington.

Mr. Wayne C. Thomas, 61 Exchange Place, Salt Lake City, Utah.

O. H. Davidson Equipment Co., 1633 Tremont St., Denver, Colorado.

Mr. Geo. M. Gerew, 447 Monadnock Bldg., Chicago, Ill. Mr. Gerew is assisted by E. A. Wilmsen.

Mr. A. A. Probeck, formerly Cleveland District Manager, has been put in charge of sales to the automobile manufacturing and accessory companies with temporary headquarters at the Royal Palm Hotel, Detroit, Mich., and may also be reached at 7617 Decker Ave., Cleveland, Ohio.

Mr. C. H. Ford has been made District Manager in Philadelphia, with headquarters at 4414 Chestnut St., and is assisted by Messrs. S. P. Scott, H. L. Fisher, H. V. Iverson and W. B. Vieth.

Mr. William Brewster has been made District Manager of the New York territory with headquarters at 50 Church St., New York City, and is assisted by Mr. H. E. Eaton.

Mr. C. W. Moore has just been appointed District Manager in Atlanta, and is building up a sales organization over the Southeastern part of the U. S. His address is 1523 Candler Bldg., Atlanta, Ga.

Mr. C. A. Weego with headquarters at the Hotel Mayo, Tulsa, Okla., has been given in addition to the state of Oklahoma, the state of Texas.

Mr. R. A. Simons has been made District Manager in the St. Louis territory, and is assisted by Mr. M. L. McBride.

Mr. Thos. R. Lloyd has been made District Manager in Cleveland and covers the northern half of Ohio, assisted by Mr. W. S. Rayburn. His address is Builder's Exchange.

Mr. J. D. Waldron, 2203 Fulton Ave., is District Representative in Cincinnati, Ohio.

The representative in the United Kingdom of Great Britain is John H. Innes and Co., 114 Union Street, Glasgow, Scotland.

Stocks of equipment and parts are kept in most of the above offices, and each office is provided with a service man to show the purchaser how to properly operate and care for his equipment, and take care of any emergency repairs, etc.

Zapon's Stephenson Retires

E. M. Stephenson, a member of the sales force of The Zapon Co., for the past 22 years, has retired from active work. "Stevie", as he is known to the entire metal-finishing trade, is one of the best informed men in the lacquer business. Many of the popular finishes of today are the result of "Stevie's" ingenuity and skill. Mr. Stephenson is now residing at his home in Hartford, Conn.

Marietta Adds Two Representatives

The Marietta Paint & Color Company is just announcing the expansion of its sales and service organization by the addition of two new men—Mr. Glenn E. Lawless of Shelbyville, Ind., and Mr. John H. Klinker, of Cincinnati.

Mr. Lawless is a practical wood finisher of many years experience with the Spiegel Furniture Co., of Shelbyville, Ind., while Mr. Klinker has had an equally broad experience with the Klinker Chair Co., of Cincinnati.

These men are now in the field demonstrating the new Marietta product, Varnitro.

Invite us to show you

Sun Flat Lacquer

We will display our goods at our expense, and give you practical advice. How best to use.

White No. 1 Lacquer

COLORLESS

Clear and transparent, looks like a coat of celluloid on work. Can be polished.

FINISHING ROOM FAVORITES

No. 115 Pale Rubbing

The reliable quality varnish that held its own so many years in the face of keen competion.

SUN VARNISH CO.

Louisville, Ky.

Questions Metal-Lined Hose

I would like to call your attention to Oct. issue, page 49, last paragraph, where you make the statement that a fluid hose, metal lined, is very durable and will give the longest possible service when properly handled.

Under certain circumstances, I believe there is an exception that can be rightfully taken to this statement. One of these circumstances is when lacquer finishing materials are being applied. It has been my experience on several occasions to find metal-lined hose being the cause of considerable trouble in the way of dirty work, where lacquer finishing materials are used. This was caused as follows:

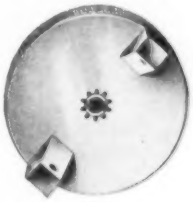
These metal-lined hose have the metal lining wound round and round in a spiral shape, leaving little creases and ridges. Now, when the day's work is done and the lacquer finishing material is drained out of the hose, even though it is followed by rinsing with lacquer solvent, there is likely to remain a thin film of lacquer in these little creases or grooves.

This, of course, hardens and later, before the hose is put into use again and when it is bent in different directions, there is always the possibility of this hardened or partially-hardened lacquer material being broken apart and flaked. Then, when the hose is put in use again, these small hardened particles or flakes come into the spray gun where they may clog it, or if they are small enough to get through they make defects on the finished work.

I understand that spray equipment manufacturers now have specially made rubber-lined metal hose on which lacquer solvents have very little, if any, softening action, and this type of hose has proved more satisfactory than the metal-lined hose—from the dirt standpoint.—W. H. Martindale.

Spray Nozzle News

A new improvement announced by the Eureka Pneumatic Spray Co., Richmond Hill, Long Island, New York, consists of a dependable self-centering arrangement of air and fluid nozzles on a spray gun, the air nozzle being guided into and held in position by the fluid nozzle in a manner which insures these members always being concentric.



This latest air nozzle has a serrated central aperture, the inner portion of the serrations acting as a guide encircling the fluid nozzle, and at all times assuring accuracy of position. At the same time it is found that this construction greatly benefits the spray which is delivered in a uniform density, free from any irregularities or fishtail effect.

It is also claimed through this improvement that the spray is delivered onto the surface in uniform density, leaving almost no perceptible blended edge and giving a result which closely approaches that produced by a brush. The accompanying illustration shows the sprayer head or nozzle arrangement herein described.

The *new* finishing material for furniture

Jones-Dabney Company Inc.
Louisville, Ky.

A Still Better Way

to Stain, Fill and Lacquer

YOU may feel that you are using the best way known to finish your products. Maybe you are. However, many firms have found that there is a still easier and more economical way—using stains, fillers, and lacquers *made in ONE plant under ONE supervision*. F. P. C. materials are *made* to work together—producing the right finish with least delay, at least cost, and minus vexing problems. Let us demonstrate what you can expect from our finishes—you will be pleasantly surprised.

F. P. C. LACQUER
for Radio and Furniture Manufacturers

Preferred by many plants for its splendid results, fast production, and low cost. Sprays and flows evenly and easily. Dries quickly. Will not shrink, check, crack, peel or print. Gives big fullness. Cuts rubbing costs. Resists steam and hot water—withstands all lacquer tests. Use it and profit.

Ask for a demonstration
by sending us your name and address
in the margin of this page

FINISHING PRODUCTS COMPANY

MANUFACTURERS OF
WOOD FINISHING MATERIALS AND
INDUSTRIAL PAINT SPECIALTIES

Always Uniform

INDIANAPOLIS

This installment of a two-part article reveals the object and development of antiquing or high-lighting and explains how the effect is attained through the use of the spray system.

Antiquing; Shading; High-Lighting—I

By Chas. Blandford

SCARCELY a display of furniture can be seen in any show room or furniture store today, that does not contain several excellent examples of the modern art of shading or antiquing. Everywhere one looks he will find this new method of decorating in one form or another.

It is present on dining room furniture, bed room sets, upholstered living room furniture and even on grand piano cases. Perhaps it is most pronounced, however, and found in every form from the very best to the poorest on novelty furniture such as end tables, smoking stands, magazine racks and so forth.

Development of Antiquing

The process of antiquing was originally based on a desire to reproduce, insofar as possible on new furniture, the same color effects which appear on antique objects that have been subjected to years and years of wear, thereby taking on an agreeable coloring that enhances the beauty of the piece.

Naturally, the truly antique pieces of furniture received more wear on some parts than on others, the color being lighter where the wear was most apparent, such as around keyholes, on door knobs and handles, in the centers of upright panels, along the edges of chair arms and seats, on the raised portions of carvings, turnings and mouldings, and on other more exposed parts.

Originally, artificial antiquing was carried out to resemble actual wear as closely as possible. Now, however, furniture is often shaded or antiqued merely as a decorative scheme, with little or no attempt to have the high lights appear on the parts where the most wear really comes. In fact, it is not unusual to find the darkest shading where the wear is greatest, and high lights where the furniture would naturally turn darker with age.

The process of antiquing is also known in the modern finishing room by several other names, such as "high-lighting", "blending" and "shading," all of which mean about the same thing. Considerable skill is required to produce these effects, the trick being to shade the object to a degree that will harmonize with the size and design of the piece. The antiquing should be so natural and gradual that the blend from dark to light appears to be a part of the finish itself, with no abrupt change of color or line of demarcation, as is present in two-tone work.

There are a number of methods of producing antique effects, some being better suited for certain work than others. Several of these methods are given below. Experiment will determine which is the best process for the work in hand.

Spraying Stain Directly on Wood

From the standpoint of true reproduction of antique work, probably the best method is to spray water or oil stain directly on the bare wood, gradually working from a lighter to a darker color. For example, on walnut the procedure with a water stain is to dissolve the proper ratio of stain powders to give the desired color effect (usually 3 or 4-oz. of powder to the gallon of water) and start coating the edges and corners of the panel with a solid coat, holding the gun fairly close to the work.

As the center of the panel is approached the gun should be gradually drawn farther away from the work, at the same time releasing the pressure on the trigger slightly so as to cut down the flow of material. In this way the stain is applied more lightly as the center of the work is approached, so that only a fog coat is applied there.

On mahogany, the natural light red color of the wood must be changed before antiquing begins, especially when a brown mahogany finish is wanted. A weak solution of the desired stain (from 1½ to 2-oz. of stain to the gallon of water) should be sprayed over the entire surface. When this is dry, a stronger solution of the same stain (about 3 or 4-oz. of stain to the gallon of water) is sprayed on heavier at the edges, but only fogged in the center, as just described for walnut.

A variation in the above procedure is to first use clean water to sponge those parts of the bare wood which are to be finished light. While the work is still wet, spray a coat of water stain evenly over the entire surface. Where the wood is dry, the stain will take darker than where it is wet, since the water has partially satisfied the thirst of the wood, and then it dilutes the stain to a certain extent.

Gum, birch, maple and other woods, which must have the original color tone of the wood modified, are antiqued by the two-stain process, similar to that described above for mahogany, whether the final finish is to be in a mahogany or walnut shade.

Follow With Shellac

Whatever the color or kind of wood being used, the stain should be allowed to dry, then followed by a wash coat of shellac (8 parts denatured alcohol to 1 part 4-lb. cut shellac) or a coat of lacquer. When this coat is dry, sand smooth, fill the wood if necessary, and finish in the regular way.

"What I like best about the men who make up the Murphy Varnish Company is the sane way in which they look at their own job—not the largest varnish makers in the world, not the only makers of good varnish, but merely the determination that all the varnish they make shall be good."

AT LAST—

A satisfactory filler for use under lacquer!

Murphy Kauriol Wood Preparation is a pyroxylin stain, filler and waterproofing material which makes a perfect base for lacquer finishing coats. Being itself a lacquer it is free from the tendency to turn gray which is characteristic of oil paste fillers when used under lacquer.

Not only does this new product give superior results but it achieves a saving in costs at the same time. Its use decreases the number of finishing operations, and shortens drying and labor time. One radio cabinet manufacturer tells us that by adopting Murphy Kauriol Wood Preparation he cut his finishing costs forty cents per cabinet.

We are sure you would be interested to see a demonstration of this new Murphy product. Won't you drop us a line so that we can arrange one at your own plant some time soon?

Murphy
KAURIOL Wood Preparation

MURPHY VARNISH COMPANY
NEWARK · CHICAGO · SAN FRANCISCO · MONTREAL

Oil stains can be used instead of water stains for antiquing on the bare wood by spraying, if desired, although it is frequently necessary to wipe the stain to get a clear tone to the work. Sometimes it is also necessary to sand an oil stain in order to bring out the high lights. It is better to use water stains when following this method of antiquing. Any first class oil or water stains are suitable for use by this method.

Lye and Aluminum

In Oct. issue, page 77, I have just read the article, "Lye Solution Destroys Aluminum," by Paasche Airbrush Co., in which they state that in my article, entitled "Finishing Room Cleanliness" in the August issue of INDUSTRIAL FINISHING, that I had advised "placing not only the gun, but the fan blades as well in a tub of lye water." This is a surprise to me, as nowhere in the article did I advise putting the guns in lye.

On page 16 of August issue, in second column under sub-head "Spray Equipment," my article reads as follows: "All hose and spray guns should be thoroughly cleaned, the hose to be cleaned at the end of a day's work, and the guns put in a solvent according to the material used."

By this I meant—and I assumed all finishing foremen would understand—that when varnish is used the gun should be placed in turpentine or naphtha at the end of the day's work, and where shellac is used, to place the gun in alcohol after the day's work.

Regarding the tub of lye, the article (same location) reads as follows: "A tub of lye water should be kept in some convenient place, and all cups to draw shellac, varnish and other materials should be placed in the lye tub as often as necessary so as to keep them clean at all times."

The article also continues as follows: "The exhaust fans can be placed in lye water at the end of the week's work and taken out Monday morning, washed off with clear water and wiped dry with a rag."

I have one spray machine in my department on which we have used this method for five years and another on which this method has been used over three years, and to this date we have not missed any fan blades on Monday morning. Neither have we had to buy any new blades or fans during this time for either machine. Of course, these blades are not made of aluminum; if they were I would use some other method of cleaning, as I am well aware of the fact that aluminum must not be placed in lye water.

However, this point is a good one to bring into discussion for the benefit of those who do use aluminum equipment.—John H. Steffen.

La Vallee Visited East

Mr. G. A. LaVallee, Sales Director of The Marietta Paint & Color Co., spent some time in the East recently with Marietta's industrial representatives at Baltimore, Md., and Gardner, Mass.

Yarnall Elects New Officers

At a recent meeting of the Board of Directors of the Yarnall Paint Co. the following officers were elected: President, David G. Yarnall; Vice President, Alfred S. Mehl; Vice President, George B. Beitzel; Treasurer, Walter P. Yarnall; Secretary, Joseph Shepherd.

An International Success

MARIETTA Varnitro

COMBINING SPEED & QUALITY IN A PRACTICAL VARNISH PRODUCT

(PATENT APPLIED FOR)

IT WAS EASY ENOUGH for us to describe with enthusiasm our new revolutionary product Varnitro, (which combines the best qualities of lacquer and varnish) but the next thing was to have this enthusiasm shared by furniture makers as well.

THIS HAS BEEN ACCOMPLISHED IN 60 DAYS

Not only in the United States but in Canada and England, is Varnitro being used.

VARNITRO

will do

ANYTHING THAT A VARNISH WILL DO
ANYTHING THAT A LACQUER WILL DO
and
WILL DO IT BETTER

Now furnished in the Dull Rubbed effect also.

THE MARIETTA PAINT & COLOR COMPANY

Executive Office and Factory: Marietta, Ohio
Southern Factory: High Point, N. C.

Use this coupon, and be assured of finishing economy.
Marietta Paint & Color Co., Marietta, Ohio.
We are interested in Varnitro. Please ship.....gallons at drum price—also panel.

Company.....

Address.....

Modern Lacquer Progress

Manager of Chemical Sales, New York Division of U. S. Industrial Alcohol Co., suggests possibilities for further research work which may result in a combined varnish-lacquer

By H. W. Haines

PROGRESS in the formation of lacquers has been mainly along the line of scientific blending and a careful study of the interaction of the components. In the first boom phase of the industry, many firms rushed into the business, without any preparation, but it was soon realized that lacquer formulas had to be built painstakingly; it was not sufficient just to throw solvents, cottons and gums together. This was particularly the case with brushing lacquers, which have come so rapidly to the front in the last year or so.

All sorts of difficulties were encountered in getting a brushing lacquer to live up to its name. To illustrate this, much work had to be done on the defect of "lifting" and the proper proportioning established so that the lacquer would have solvent power enough to hold its components in solution and yet not attack the underlying coats when it was necessary to apply more than one. Again, correct flow and speed of setting are most important in a brushing lacquer, for in order to produce the best looking finish, it must level out before it dries.

Many of the earlier brushing lacquers developed a tendency to "seal over" or "surface dry" which caused rippling and wrinkling, and even now orange peel and dimple effects are met with. So it will be seen the manufacture of a successful brushing lacquer was no job for a novice, and as a result the firms who have made the greatest advances are the ones who have done extensive laboratory development on the subject.

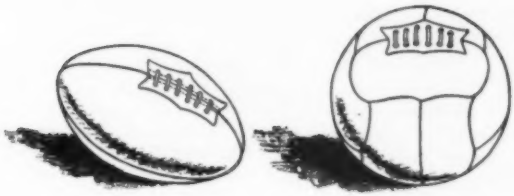
Lacquers and Varnishes Aim at One Goal

What is the future of lacquers? To the writer it seems that varnish and lacquers will come closer together—perhaps to evolve a coating medium which, according to our present concept, is neither varnish nor lacquer. The varnish and lacquer makers are really working toward the same end, that is to produce a film which is tough and rugged under all service conditions, that will dry in a short space of time, is ornamental and moderately priced.

Assuming a critical attitude, we might suggest that varnish has the drawback of drying too slowly and lacquer has the drawback of not covering adequately.

So the varnish maker is trying to speed up the drying of his oil vehicle to hold the obvious advantage of high solid content, and the lacquer maker is doing his best to cut down the volatile portion of his products to hold the advantage of speed and yet secure adequate covering.

How nearly will the ideal be realized? With our present type solvents, it seems the situation is almost stationary, and no immediate improvement is in view, but



The football or the soccer ball...which?

THEY'RE equally good balls, so far as quality goes. But you wouldn't use a soccer ball to play football with—and you wouldn't use a football to play soccer with, would you?

It's the same with finishes. A good finish, no matter how excellent its quality, cannot give effective results simply because it's a good finish. Unless your finish is *scientifically adapted* to the surface which it is to cover, it will not give the results which each special finishing problem requires.

To this end the du Pont Company puts at the disposal of all manufacturers its Industrial Finishing Service—an organization backed by the experience and research of the du Pont technical and laboratory staff—which staff can scientifically adapt finishes to every industrial finishing need.

For full particulars write to E. I. du Pont de Nemours & Co., Inc., Chemical Products Division, Parlin, N. J., Detroit, Mich., Chicago, Ill., San Francisco, Cal., Everett, Mass., or Flint Paint and Varnish Limited, Toronto, Canada.

DU PONT

what of a new solvent or combination with "setting" properties, similar to the familiar linseed oil, but much more rapid in action? This "setting solvent" would naturally have to remain fluid long enough to permit proper application, but should dry and become insoluble with a minimum loss of weight.

A Forecast (?)

An approach to this problem is already under way and some rudimentary products have been tried out as under-coating with a measure of promise.

Again reverting to established facts, it is known that certain organic substances, notably the aldehydes, phenols and some colloids which are soluble individually in combination produce insoluble bodies called condensation products.

For example, glue and formaldehyde give a tough jelly somewhat resembling rubber in resiliency. Other condensation products of which the phenol-resin bakelite is a good example, are hard and horn like.

Bakelite, as everyone knows, appears on the market in many forms. It is tough, hard, takes a good polish, is durable, fire resisting and its components are plentiful and cheap. Can a substance similar to bakelite be precipitated or developed on a surface? If this can be done, commercially and practicably, a new chapter will be written in the history of the finishing industry. —Paint, Oil and Chemical Review.

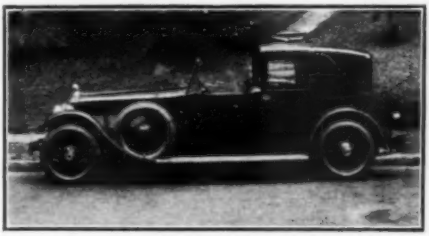
The process of finishing is subject to a rapid change. What is true today may be old stuff a year from now.

Things Worth Knowing About Linseed Oil.

Did you ever place your hand on a surface that had been painted or varnished some weeks previous, and find it still tacky? One day last summer, while visiting a friend I was shown some work that had been painted more than two years before, and it was still tacky. It was so soft that if the hand was pressed against the paint for a few seconds, an imprint would show clearly and distinctly on the paint. I have seen the same thing in connection with furniture which had been varnished with a cheap "store" varnish.

To condense a long story into a short, informative one, I would say that linseed oil is one of the chief ingredients in high-grade varnishes. It is a drying oil but it does not dry by evaporation. It dries by absorbing oxygen from the air, and this changes it from liquid to a hard, rubber-like substance, which is practically waterproof. Linseed oil is obtained from the seed of flax, a plant of the genus *Linum usitatissimum*. Large quantities of it are grown in India, Russia and America.

There are two kinds of linseed oil, namely, boiled oil and raw oil. The common way of extracting the oil from the seed is by subjecting it to great pressure in powerful hydraulic presses. Raw linseed oil is extracted from cold seed; boiled oil is extracted from heated seeds. Raw linseed oil can be distinguished from boiled oil by its color, the former being clearer and paler than the latter, as heat tends to heighten the color, due in large measure to the breaking down of the mucilaginous matter in the oil.



PE-CO-LAC
LACQUER

Used for finishing or refinishing automobiles.

Pe-Co-Lac is also used extensively by furniture manufacturers for both metal and wood furniture with splendid results.

Pe-Co-Lac is supplied for either spray or brush work. It is our privilege to advise you as to the correct reducers to use with lacquers—colored or clear.

We employ practical demonstrators—let one of them come to your plant.

PECORA PAINT COMPANY

4th St. & Sedgley Avenue
Philadelphia, Pa.

Established 1862 by Smith Bowen

Incorporated 1911

Boiled linseed oil dries more rapidly than does the raw article; it is less elastic and less durable under extreme weather conditions. For this reason it should not be used for outside work. A considerable quantity of the linseed oil sold as boiled oil is in reality raw oil, to which has been added some kind of drier, usually of a very cheap character. This gives the raw oil the color and drying characteristics of the boiled article, but renders it very much inferior to the pure oil.

Frequently linseed oil is adulterated with mineral oil, rosin oil, or fish oil. The presence of mineral oil sometimes may be detected by spreading a film on a piece of glass, and allowing it to dry for a few days. If a heavy mineral oil has been used as an adulterant it will be indicated by a slight grease film over the oil film. If a light mineral oil has been used as an adulterant the use of a hydrometer may be necessary to detect it, as the oil may dry hard on the glass, and without the greasy film.

The specific gravity of unrefined raw linseed oil varies slightly, but should not be less than 0.932; the specific gravity of refined raw linseed oil may be 0.931, while that of boiled oil may be somewhat lower. The specific gravity of mineral oils runs as low as 0.725. When linseed oil is much below the specific gravity of 0.931, there is good ground for suspecting the presence of mineral oil.

Rosin oil is more difficult to detect. If a considerable quantity is present it may be detected by placing a little on the palms of the hands and rubbing them together smartly then observing the odor. It may be detected also by the way it dries on a piece of glass, as well as by its appearance after it is dry. Pure raw linseed oil should dry within a period of from 48 to 96 hours, all depending on the temperature and humidity. If linseed oil contains a quantity of rosin oil, the latter will prevent it from drying hard, and the surface will remain tacky for a long time.

Fish oil, if thoroughly deodorized, is very difficult to detect in linseed oil unless it is present in a considerable quantity. Heat will destroy the deodorizer and restore the odor of the fish oil. However certain raw linseed oils when heated have a peculiar odor which must not be confounded with that of fish oil. Linseed oil, adulterated with fish oil, will never dry hard; the film, over a surface coated with it, will remain tacky for an indefinite period of time. In warm and humid weather it becomes so soft that a cloth pressed against it will leave fuzz sticking to it.

Fish oil has the power of attracting moisture to itself from the air. Thus, early in the morning after a heavy dew, a piece of wood coated with paint containing fish oil will be heavily covered with moisture. Another piece of wood in the immediate vicinity, but painted with pure linseed oil, will be dry.—B. M. Z.

SUPERIOR WOOD STAIN POWDERS

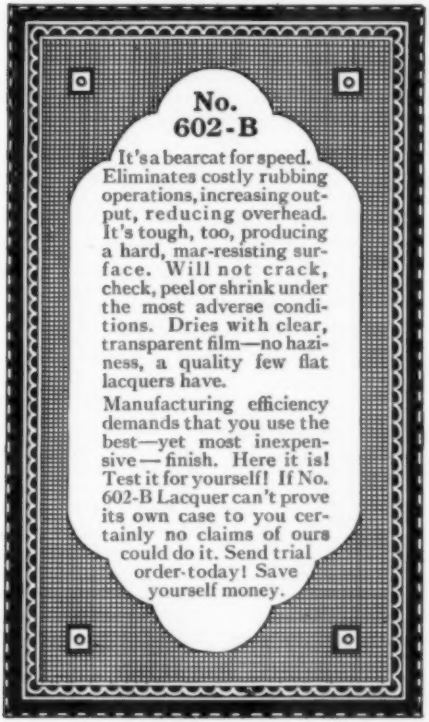
For Lacquer and all finishes.

Complete variety of shades. Samples and information on request.

W. D. LOCKWOOD & CO.
314 W. 14th St., New York

Wood alcohol does not function well in many present-day lacquers.

Man—what a Lacquer this is!


No.
602-B
It's a bearcat for speed. Eliminates costly rubbing operations, increasing output, reducing overhead. It's tough, too, producing a hard, mar-resisting surface. Will not crack, check, peel or shrink under the most adverse conditions. Dries with clear, transparent film—no haziness, a quality few flat lacquers have.
Manufacturing efficiency demands that you use the best—yet most inexpensive—finish. Here it is! Test it for yourself! If No. 602-B Lacquer can't prove its own case to you certainly no claims of ours could do it. Send trial order today! Save yourself money.

The

ROCKFORD VARNISH
Company

ROCKFORD, ILL.

An important step in wood finishing—one on which depends permanence and beauty

Selection and Use of Stains

To obtain satisfactory results in wood finishing particular attention must be given to cleaning the wood surface and to the preparation, application and drying of stains

By Robert L. Kent

CAREFUL selection of stains for use under lacquer is necessary to secure the best results in finishing. Whether powder or liquid stains are used, they should be purchased from reliable manufacturers. It is safe to state that many of the faults in finishing are due to improper selection and use of stains.

Scantiness and unevenness in the application of stain are two of the most common faults. A little more care and judgment exercised here, and also making certain that the shade of the stain is not too dark, will insure the proper depth of color to the finished product.

The Effects of Light

Much has been said and written regarding the need for good light in the finishing room, and the faults mentioned above often are the result of lack of proper working facilities. Even if the best possible stain is used, good workmanship is almost impossible where light is of a poor quality. Workers in the finishing room must be able to see what they are doing. The color effects of stains vary according to the light in which they are viewed, therefore a little money spent in making the finishing room bright enough to permit clear vision, will prove an insurance against faulty workmanship.

Weighing and Measuring

Of course, there are many other conditions that may cause poor work. In the use of powder stains, for example, when determining color strength to obtain uniformity of finish in various jobs, the only accurate and certain method is the careful weighing of the powder dissolved in a measured volume of liquid. When this is done the color can be accurately determined and duplicated—so long as the quality of materials remains uniform.

One must consider the possibility that some manufacturers may, in order to cut prices, dilute the color strength of stain powders by the use of ingredients, which do not materially change the color of the powder but which give it weight, thus saving the expense incidental to the use of the best coloring materials.

Needless to say, the use of powder or liquid stains, cheapened in this manner, may make first-class workmanship practically impossible. This is reason enough for exercising the greatest care in selecting stains. The matter of price should not be the factor of first importance in a product of this character—a

AD·EL·ITE

T.M. REG. U.S. PAT. OFF.

Finishing Service

adds to the saleability of your product by helping to increase the beauty, originality, economy and durability of its finish.

All effects produced on your samples are exclusively yours, created by practical men from close study of your design combined with their wide experience and knowledge of present day demand in color and decoration.

- ☐ Bedroom
- ☐ Novelty
- ☐ Breakfast Sets
- ☐ Fibre
- ☐ Kitchen
- ☐ Chairs
- ☐ Dining Room
- ☐ Living Room
- ☐ Office and School
- ☐ Cedar Chests
- ☐ Radio Cabinets
- ☐ Juvenile

Simply check to indicate what type of furniture you manufacture, and return this ad to us indicating when you would like the visit to take place. *An inquiry does not obligate.*

Adams & Elting Co.

1833 Seward Street

Chicago, Ill.

"35 years of wood and metal finishing experience"

product that may mar the finish of the work turned out by the user and thus cause the manufacturer a loss that makes the saving on a cheap stain seem ridiculous.

Sanding and Cleaning

Another cause of faulty workmanship—one easily eliminated—is improper or careless preparation of the wood before it reaches the finishing department. It is of utmost importance that the surface of the wood be absolutely right before it reaches the finishing department. In the first place, the wood should be thoroughly dry and smoothly sanded.

In connection with sanding it is essential that all sandpaper dust be removed from the pores of the wood. Flat surfaces should also be perfectly flat, and all surfaces should be free from scratches and other imperfections that may be exaggerated in appearance by the finish.

Certain woods, such as mahogany, for example, are very likely to show grain raising with water stains, unless the surfaces are first washed with warm water, permitted to dry and again sanded with fine sandpaper. While this may not eliminate raising of the grain entirely, it is a great help and makes good finishing possible. The raised fibers may be stiffened by a very thin coat of shellac, thus making it easier to cut them down by sanding.

Allow Time for Drying

"The more haste, the less speed," is a rule that often applies in the finishing department, especially in connection with the use of water stains. Too great haste in the application of a following coat may mar the finish of the job. The causes of sweating, cracking and many other troubles can often be traced to haste in applying coats that follow staining.

Wood that has been water stained must be permitted to return to its normal state of dryness before it is in suitable condition to receive further application of finish. At least a full day is usually necessary for the moisture content of the stain to evaporate, unless forced drying is employed. Where oil stains are used, more drying time is required.

There are a variety of methods of applying stains, the type of work to be done usually determining the best method, although for good all-around work, brushing is probably as satisfactory a method as any. Dipping, spraying and brushing each have their advantages.

Spraying Stains

Where large surfaces are to be covered, and conditions permit it, spraying is the speediest and most economical method. Spraying also permits of staining effects which are almost impossible to produce in any other way. The factor of expense is an important one here. It is obvious that where the salability of an article depends largely on price combined with quality, and where competition between manufacturers is keen, a material saving in

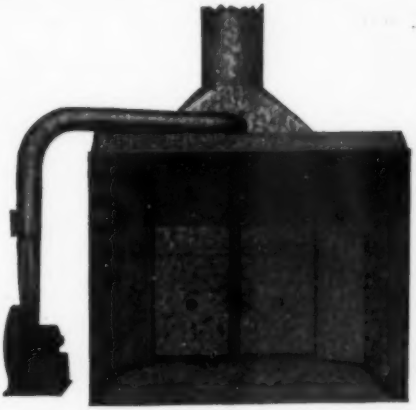
LACQUERS for Autos

Extensively used, free from gum, uniform, reliable and economic. Pioneer lacquer makers who can satisfy your requirements. Write for prices.

Chas. Cooper & Co.
90 Worth St., New York
Works—Newark, N. J. Since 1857

NEWCOMB
SYPHON VENTILATED CABINET

ONE of our latest and best developments is the fan with direct connected motor, independent of booth, with rear of booth fitted with Reclaiming Chamber and Baffle Doors.

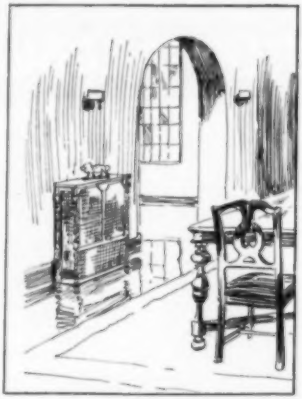


Wherever spraying or airbrushing is done with shellac, paint, stain, enamel, lacquer or varnish, this installation will effect an appreciable saving in operating costs, make impossible clogging of the fan and eliminate a fire risk.

Grand Rapids Blow Pipe and Dust Arrester Company

Dust Collecting Systems 527 Monroe Ave. Grand Rapids, Michigan

"Eliminate a Fire Risk"



Finished with Egyptian Lacquer

THE Kauffman Radiator Shield, here illustrated, is shown through the courtesy of the manufacturer, the American Metal Products Corporation of St. Louis.

This article is finished with Egyptian Lacquer as is the entire production of the American Metal Products Corporation.

This is but one of thousands of manufacturers who are employing Egyptian Lacquers on all or part of their production.

The Egyptian Lacqu

90 West Street, Ne

Chicago **Los Angeles**

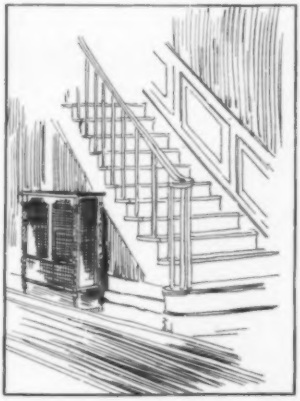
EGYPTI
Lacquer

Egyptian Lacquers

FOR fifty years Egyptian Lacquers have been known to and used by the Industrial finishing field.

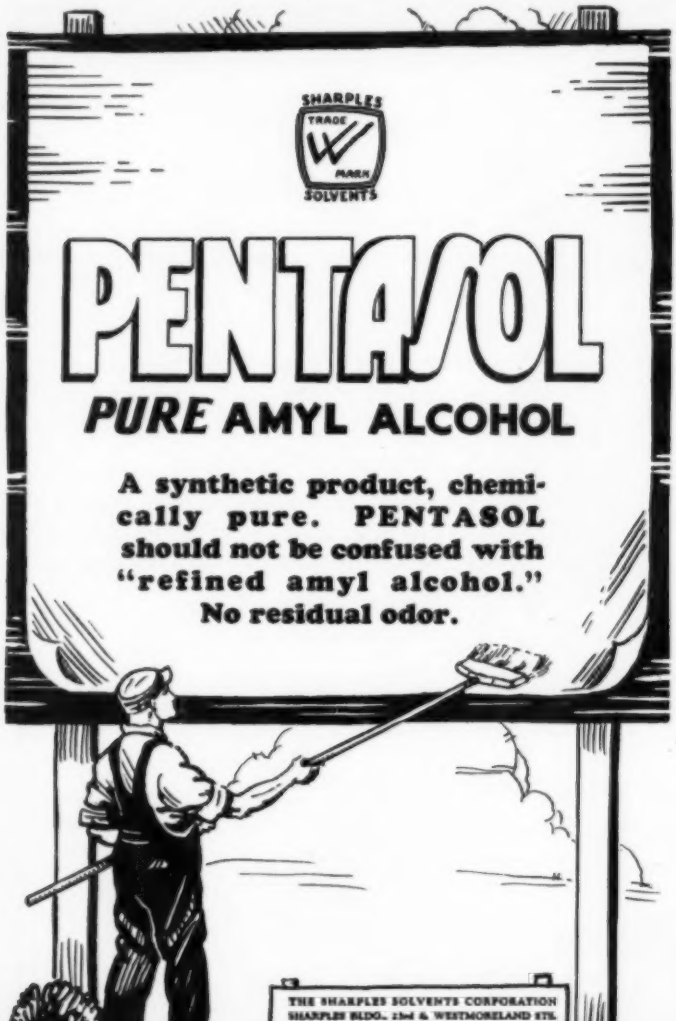
There are numberless firms, outstanding in the nation's industry that have used Egyptian upwards of thirty years.

Surely the continued use of a product over a period of years is sufficient evidence of its dependability.



n Lacquer Mfg. Co.
Street, New York
Los Angeles San Francisco

YPTIAN
acquers



Kindly mention INDUSTRIAL FINISHING when writing advertisers

the finishing room may make all the difference between successful sale of the finished product, or the business going to other manufacturers.

After all, the finishing department is part of an organization composed of various other departments, the whole concentrating their combined efforts on producing a finished piece of work. The manufacturer is in business to make a profit on his products, and any saving in the overhead, whether it be in the finishing room or in the executive offices, is of vital importance, because it affects the very existence of the organization.

Dip Small Articles

Where small articles are made, spraying may be too costly because of waste due to the amount of sprayed stain going past the object. For this reason dipping has been found most efficient on small articles. One method of dipping small articles consists of stringing them on a wire, dipping them, and hanging them up to dry above a drain board. Very small articles are usually dipped in a wire mesh basket and spread out on glazed paper to dry.

It is essential that the stain be kept at a uniform temperature. This can be satisfactorily accomplished by means of a hot water jacketed tank, or by the installation of a steam coil in the bottom of the tank. Where the latter is used, great care should be taken that no steam ever discharges into the tank, as condensation naturally will occur and eventually the stain will be diluted and the color weakened. While the dipping of solid wood parts can be carried on safely and satisfactorily the dipping of veneered work courts the danger of the veneer being loosened.

Brushing Stains

Brushing is the slowest of the three methods of staining, but on certain kinds of work it may be advisable. Here, too, the work may be marred by carelessness, in fact, more easily than when using the other two methods. Stain applied by brushing, should be at room temperature.

If the stain registers a higher temperature at the time of application, its ability to penetrate the wood as it cools will be effected. As a result some variation of shade and sacrifice of quality workmanship may be expected. Here again, it may be well to emphasize the need of correct working conditions. Surely the problem of keeping the finishing room at the correct temperature—considering the importance of the work being done there—is important enough to warrant serious attention.

A fine bristle brush of the flat type is recommended for this work. Some workmen use a sponge, and while this may speed up the work a bit, the results are no better than what can be accomplished with a brush in the hands of a first-class workman. Then too, the use of a sponge has the disadvantage of leaving the workman's hands in a frightful condition.

LACQUERS for Wood

Pioneers in wood lacquers that give a finish that lasts. Made to satisfy users for sixty-nine years. Write us your requirements.

Chas. Cooper & Co.

90 Worth St., New York

Works—Newark, N. J. Since 1857

Industrial Finishing

PRACTICAL PUBLICATIONS, Inc.
Publishers
Room 603, 222 E. Ohio St.
Indianapolis, Ind.

Issued monthly. Distributed exclusively to executives and foremen finishers in all kinds of industrial plants where finish coats are applied.

NOVEMBER, 1926

Sources of New Business

Statements that reveal production figures of a single large plant or of group of factories, often assume such staggering proportions that they overwhelm the imagination of people unfamiliar with potential outlets for such goods. Where does all your output go and, at the present rate of production, is it not a matter of limited time when your output will more than satisfy the needs of your customers?

This question occurs to more people than are willing to admit it. Sometimes the inquiry is really voiced, but more often it arouses the curiosity or concern of people who haven't the opportunity or nerve to ask it.

Some interesting facts which may help to answer such questions in a general way, as regards the retail trade, are disclosed in a short article entitled "Go After New Trade," in *The Gregorian*, published by the Gregory Furniture Mfg. Co., Tacoma, Wash. According to the article, "Each year 2,500,000 Americans are born. It's difficult to fully appreciate the 'new trade' created by this vast army of young Americans. It means that hundreds of thousands of homes are potential customers for cribs, baby carriages, high chairs and many other articles of juvenile furniture.

"Each year also 1,250,000 women become brides, and 1,250,000 men find out that it does cost more to support two than one. Here is where a great deal of new trade comes from.

"To make room for this new trade, 1,400,000 Americans die, and about 1,000,000 more quit producing every year and live on the rest of us until they die."

When one considers these startling facts and speculates, too, on the vast quantities of goods of all kinds that are continually wearing out, being destroyed, damaged or otherwise going into the discard annually, we begin to realize why orders for more goods continue in sufficient volume to keep mammoth establishments in production on the large scale that now prevails.

The improvement of articles in quality and appearance at no added cost, or the lowering of prices for the same values previously offered, and the higher standards of living being attained by an ever increasing number of people—these factors also account to quite an extent for, not only the steady and healthy continuation of demand, but generally for an increase in demand for manufactured goods. The demand, in any great magnitude, for certain brands of goods, is largely influenced by well-directed advertising.

Improving the Finishing Room

During the past year or so, some remarkable improvements have been made in certain finish-

ing rooms and the results accomplished through the operation of improved finishing schedules have aroused the interest of many more individuals and concerns in the industry.

With one or more well lighted and properly ventilated rooms in a modern type of building, an elevator, dip tanks, spray booths, rubbing machines and some portable racks, many firms assume that they have the last word in the way of an improved finishing department. If the work doesn't go through with dispatch and economy, and in the volume and quality that other concerns secure, the usual thing is to look to the finishing foreman as being responsible. Sometimes a responsible finishing foreman isn't employed, and it falls to the lot of some executive in charge of production to shoulder the responsibility when results are not what they should be.

Dissatisfaction with present results is the first impulse that prompts taking a step forward in progress. Investigation is really the first step toward improvement, and today many concerns have arrived at this stage. Others have completed their investigations and have improvements well under way. A case to point developed just recently through an article that appeared in INDUSTRIAL FINISHING.

An executive of a certain concern told this writer that the article on page 11 of Sept. issue started him on the right track, and that after having made a complete investigation, he had formulated plans for improving his finishing room with regard to the handling and routing of the work with greater dispatch and economy. "Come down and see our finishing department in three or four months," he said, "and we will show you a real efficient and economical layout and several other improvements."

This concern has a fine new building and all modern appliances, but in meeting close competition the management had felt for some time that the weak link in its production system was the finishing department. It has been seeking information and now has corrective measures planned and started.

The same conditions prevail in many other factories, in some cases with and in others without the knowledge of management. With so many concerns now investigating or putting into effect the results of an analysis of possibilities for improvements, it is time for others, who have remained unconcerned, to fall in line and learn what more can be accomplished in the way of improvement when they already have modern spray outfits, rubbing machines and portable racks installed in buildings of the latest type.

"Experience is the best teacher." The operator may read volumes on how to correctly spray an article, but this will be of little help until he has had the opportunity to personally spray a job or two. Such an experience will teach him exactly the things to watch for in doing the work.

Skill is required in spraying; pitting and orange peeling can entirely be eliminated by the spray man properly adjusting the gun, gauging the correct distance the gun should be held from the panels, and properly reducing the lacquer.

SPRACO

Model 14-A Gun

The Last Word in Spray Painting

A dozen of the salient features of this gun are enumerated:

1. Perfect atomization and uniform spray at low pressure.
2. Adjustable spreader giving fan spray of controlled width in any plane.
3. Positive nozzle shut-off, no "spitting" or leaking after release of trigger. Partial pull of trigger admits air only for dusting or drying off work.
4. Ease of cleaning and care; shortest possible fluid passage.
5. Needle and nozzle only parts in contact with paint.
6. Lightness combined with ruggedness.
7. Simplicity in design, interchangeable parts.
8. Natural grip and balance.
9. Light trigger pull and two finger trigger.
10. Interchangeable quart or pint aluminum material containers.
11. Containers instantly attached or detached with bayonet lock; no stocking or leaking.
12. Universal — container may be detached and gun used on either pressure or gravity feed equipments.

Spraco Painting Equipment Company

Sole Manufacturers

60 HIGH STREET, BOSTON, MASS.

Sales and Service Branch Offices:

New York Atlanta Cleveland Detroit Chicago

SPRACO

The Universal Gun

Read what a territorial representative of one of the largest paint manufacturers in the world wrote a friend who had advised him to buy a SPRACO Gun—

"I am taking this opportunity of thanking you indeed for your suggestion, 'try out the Spraco Gun'. Had I written you before, I would have been unable to tell you how successful my work has been, using this masterpiece.

"I have not used every make of Gun, but have used five other makes, and in each instance have found two things. First, to shoot a solid wet coat of heavy body undercoater, they would choke and had to be cleaned. Second, other guns required Enamel to be put through much heavier to get evenness and if thinned too much, seemed to sag, through no atomization of thin material.

"With my Spraco, I can shoot anything and anyhow, also a fog coat goes on every time flattening out like glass.

"Thanking you again for this kindness and advice, I beg to remain."

What a SPRACO Gun has done for others it will do for you. We stand back of SPRACO Products' performance, service and advertised claims.

Ask for Bulletin 103

Spraco Painting Equipment Company

Sole Manufacturers

60 HIGH STREET, BOSTON, MASS.

Sales and Service Branch Offices:

New York Atlanta Cleveland Detroit Chicago

Do your furniture interiors hold a pleasant surprise for the shopper.

Finishing Interiors of Furniture

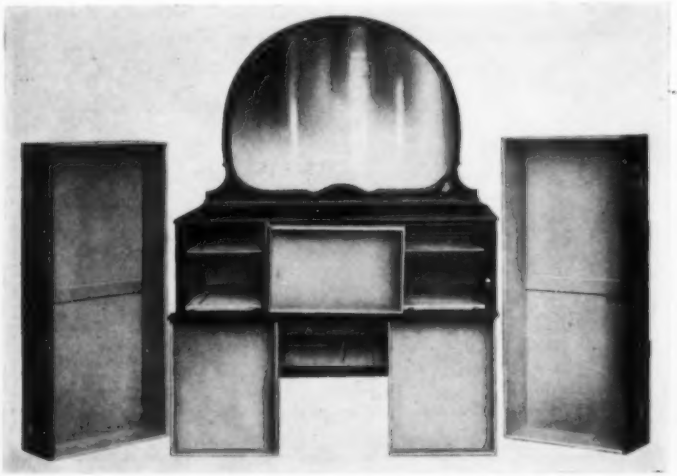
Foreman Finisher reveals some interesting facts about the color, tone, texture and quality of finishes for interiors of furniture

By J. H. Hamilton

TODAY, when a person desires to purchase an article of furniture, whether it be for the home or office, the interior finish invariably plays an important part in the final sale of the article. As a rule, one of the first things a customer does, is to pull out several drawers to see the interior finish. In the case of a chifforobe or chifforette, the customer expects to find it neatly finished inside, the color corresponding to some degree with the exterior. If he doesn't find this attractive interior the sale is usually lost.

The manufacturer who neglects the interior, deeming it of little importance, is making a serious mistake. With competition as it is today, everything is of importance.

The sides of the drawers should be given careful attention, to see that they are well surfaced and stained or otherwise colored to match the interior color. Varnish should not be used on the outsides of drawer sides, as varnish



You May Be Satisfied

but are you really getting the best finishes?

When you adopted mechanical painting equipment to finish your products, you were well pleased with the improved appearance of the finish, and the greater speed with which your finishing work was done, and the lower costs. Maybe you are still satisfied with the results you are getting. However, in all probability you can even get better finishes than those you are getting now, and at lower cost and with greater speed.

Almost invariably when we come in contact with manufacturers who are fairly well satisfied with the results they are getting and they try the Matthews Finishers Gun and Equipment, they are able to get much better finishes at a substantial reduction in costs.

Some of the largest manufacturers in the country have had this experience with Matthews Mechanical Painting Equipment. Several of the leading paint manufacturers after using all other makes, standardized on Matthews Equipment with which to demonstrate their various finishes and surface coatings. You no doubt will have this same experience after you try the new Matthews Finishers Gun and Equipment. From the standpoint of good business, investigate. You will be under no obligations, and you will be the sole judge.

GET THIS BOOKLET. Send for the Matthews Product Finishing Booklet. This is a 10-page booklet that will give you complete information on the newest developments in mechanical painting equipment for product finishing.

W. N. MATTHEWS CORPORATION
3744 Forest Park Blvd. St. Louis, U. S. A.

MATTHEWS
MECHANICAL PAINTING
EQUIPMENT

will cause trouble when opening and closing the drawers. A thin coat of shellac or lacquer can be used with fine results.

Production Practices

Many firms sand a large quantity of drawer sides and bottoms at one time. From a production standpoint this is proper, but if the material is left unused for a considerable length of time, the surfaces will become rough, due to grain raising, and as a result a first-class interior finish is impossible unless the parts are sanded again before any finishing material is put on. If these drawer sides and bottoms are sanded just before the cabinet maker puts them together, and if immediately after assembly they are sent to the finishing department and worked out, a splendid finish will be obtained.

Any loss in the machine room production, due to this procedure, will be more than made up by the saving of sanding labor and sanding material in the finishing department. With this method one has the assurance of getting a much smoother and better finish, which is what counts as a sales value.

With the exception of the cheaper grades of furniture and decks, the unfinished interior is rarely seen today. Practically all medium and high grade household and office furniture has an excellent interior finish, some having as good finish inside as on the outside.

Lighter Tones Inside

Mahogany or walnut furniture, with drawer bottoms veneered and finished lighter than the exterior, offers a beautiful appearance and is always sure to prove attractive. All drawers, whether they be in oak, mahogany, walnut, or any other color, should be finished lighter than the exterior, as a dark finish inside does not look so well; it tends to cheapen the article and generally is more costly to apply.

For a first-class finish in walnut and mahogany drawers, the drawer bottoms should be stained and filled before the drawer is put together, the stain used being lighter than that applied on the outside. Or, the bottom can be filled and the drawers put together, then stained over the filler and wiped up with a rag. This will give a color somewhat lighter than the exterior and it makes an excellent finish.

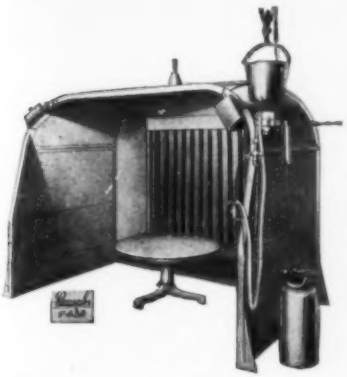
Kinds of Wood Used

Practically every kind of wood known to the lumber trade has been used to make drawer sides and bottoms, some manufacturers having the one thought of getting this material as cheaply as possible, and attaching little importance to the interior finish. Such practices are mistakes. The buying public demands a better finished product, and the color and finish will not, as a rule, prove satisfactory where a poor grade of wood is used.

The various gum woods on the market, such as white, and black or tupelo gum, also beech and birch are used quite extensively. These do very well for medium priced furniture, but for the better grades—if one does not want to use walnut or mahogany bottoms—red gum is then the best substitute. Red gum will give a beautiful finish in either walnut or mahogany—far better than any of the other woods mentioned.

Avoid Glossy Finish

In the finish, a glossy coater,



5 More of the 101 Reasons for Paasche Superiority:

1. *Paasche Multiplehead Airbrushes*—Perfected details combined with exclusive design insure uniform quality work, speed, economy and maximum range of applications.
2. *Gravity Feed Cup*—Unbreakable light copper cup with patented clamp-tight cover eliminating leaking and sticking.
3. *Hose Couplings, Valves and Fittings*—Special designs facilitate quicker and easier handling, minimize upkeep and increase efficiency.
4. *Superior Rubbing Machines*—Pneumatic power replaces hand power with tremendous saving in time for many classes of work.
5. *Finishing Cabinet*—Designed to meet all rulings of the Fire Underwriters. Provides better ventilation at less cost.

Changing standards of value

A few years ago fumed oak mission was the big seller in living room and dining room furniture. Today a fumed oak finish is an antiquity. New and higher standards of finish have been accepted.

Similarly, brush finishing was the vogue in furniture factories not so long ago. Then came spray finishing and a new standard had been set. But standards keep changing. There are many spray guns that will apply furniture finishes, but today's high standard of quality demands the Paasche Airbrush and the complete Paasche equipment. It not only applies all finishes but, through refinement in design and careful correlation of all parts, produces the highest standard of value ever reached in furniture finishing.

When you consider spray finishing equipment, judge it by present-day standards. On that basis you'll find Paasche right at the head of the list. May we give you facts regarding the service of Paasche equipment in plants like yours?

Paasche Airbrush Co.

1921 DIVERSEY PARKWAY, CHICAGO

New York 54 Dey St. | Detroit, Mich. 11-237 General Motors Bldg. | Cleveland, O. 418 Perry Payne Bldg.

Los Angeles, Calif.—411 Douglas Bldg.

THE LARGEST EXCLUSIVE MANUFACTURERS OF AIR FINISHING EQUIPMENT

IF 11–Gray

Kindly mention INDUSTRIAL FINISHING when writing advertisers

or varnish, should never be used, as this not only cheapens the appearance of the article but also leaves a sticky finish, which will cause articles placed in the drawers to stick, especially during the hot months when the coater or varnish has a tendency to soften up. There are various ways of finishing interiors, and each firm has its own ideas, but it is well to remember that the dull or flat, velvety finish is preferable.

Suggested Finishes

Two coats of shellac can be used with good results, sanding the first coat slightly. The offbearer of the sprayer can do this sanding while the operator is applying the second coat. One coat of shellac or shellac substitute and a coat of flat varnish gives a fine finish, also. Two coats of lacquer will give a fine, smooth surface, durable and with no danger of softening or becoming sticky. There is on the market an interior finish known as "flat oil drawer coater." One coat of this on a medium priced piece of furniture gives a smooth, velvety finish with a good body. For high grade work, two coats of this material will give a finish satisfactory to anyone, and no sanding is required between coats. This material is furnished in colors to match oak, mahogany and walnut.

Finishing Shoe Lasts and Bowling Pins

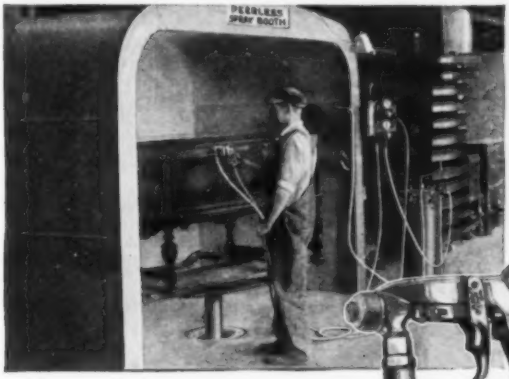
How these well known articles, made of the hardest and lightest colored maple, are given their attractive and durable finish coatings

By Donald A. Hampson

NO MATTER how attractive colors may be to the eye, the natural grain of wood carries with it an appeal that is equally strong. Perhaps it is because there goes with the natural wood finish the feeling of genuineness—of high quality as contrasted to inferior material disguised by paints—or it may be because the beauties of the grain itself attract, as they are brought out more forcibly by the finish. The truth is that there is a steady demand for products in the natural finish, and these are produced fully as easily and cheaply as those which are done in colors.

Finished Light and Clear

Shoe lasts are finished in the clear almost exclusively. This applies to those which are made strictly for the trade and those which are sold over the counter for individual use as shoe trees. Some of these are in one piece and some in two, but the mode of surfacing is the same in either case. Only the best of rock maple is used in their manufacture. This wood lends itself to a fine finish because of its hard and dense nature—a saying of the trade being that, "the harder the wood the better the finish that you can get."



for Shading, Blending *and* High-Lighting

Your men can now get right down to fine shading in less time and with the assurance of better results. They can now lay contrasting colors as fine and clean as the art requires.

The PEERLESS SPRAY GUN

with the New

SHADING ATTACHMENT

Before the perfection of this special shading device it was necessary to regulate the air pressure and let the material flow take care of itself. This made shading difficult and expensive. This has all been changed now.

The Peerless Spray Gun always has had separate air and material control. By the perfection of a special Nozzle that will regulate the spray to a fine fog, controlled to almost hair-line thickness, any desired volume of air may be employed.

The Peerless Spray Gun used as standard equipment in many of the leading factories can now be employed for shading and staining as well as for the application of all base coats and all finishing coats. This new Nozzle Attachment for all Shading purposes is interchangeable with the nozzle used for all other work.

For Color Work

You can lay a bright color just where you want it,—then, shade another color to it; or blend them together if you wish. You can now secure high grade effects, that would have been prohibitive before.

If you have a Peerless Spray Gun, get this attachment. If you have never given the Peerless Spray Gun the make-good opportunity it deserves, do so now. In addition to recognized time, cost and labor-saving advantages you now get better shading at a cost no other spray gun can give you.

Write for details now. It will pay you well.

PEERLESS PNEUMATIC SYSTEMS, Inc.
118 N. Jefferson Street — — Chicago

Peerless Pressure Containers are built in a variety of styles covering every conceivable use. They range in sizes from 15 to 800 gallon capacity, — and supply from one to a battery of spray guns. Agitation by hand or by motor. Write for details.

After the lasts are turned to shape and smoothed, they are given a coat of clear shellac, the method of applying shellac differing with the particular factory's equipment and with the quantity ordered. Where possible, this shellac is allowed to dry until the next day, and in the ordinary run of things this follows by having sufficient quantities going through.

Some lasts call for marking in addition to the polish, for instance, there may be a pink stripe run across the top at the point where the cap of the shoe ends. Such stripes are put on first and the shellac goes on afterward.

When the lasts get to the polishing line, piece workers take them and apply them to the buffs. This application calls for a great deal of pressure and a good deal of turning over and around, in order that all parts of the irregular shape may be given an equal luster. The high speed of the buffing wheels and the pressure applied by workmen bring out all the polish desired, the shellac on the wood then showing up clear, shiny and smooth.

Leather Buffing Wheels

For polishing, leather wheels are used. These are not the hard wheels so familiar in the polishing of metals, but are wheels made up of thin leather disc—machine buffs of soft leather, about 10-in. in diameter, and clamped between the collars of a buffing machine spindle in sufficient numbers to make up a wheel of an inch or 2-in. face, according to the individual case.

These wheels gradually become coated with shellac and then they will not do good work until they are taken off for soaking the shellac loose. After this treatment they do not "drag," but will impart the kind of finish so much desired. These leather wheels run at an approximate surface speed of 7000-ft. a minute.

Another way of producing the natural wood finish is with vegetable wax. It is a method of finishing used extensively in the manufacture of bowling pins. For this work, the wood turner holds a chunk of wax against the rapidly revolving pin. The heat generated by this friction softens the wax so that it "flows" and enables a thin coating to be applied to the whole surface in a few seconds.

Wax Finish

This wax, which is made from certain oils obtained in Latin-American countries, imparts a coating that enters the wood cells to sufficient depth to make the pins proof against the ordinary moisture encountered in buildings.

The "vehicle" used to bring out the polish may be a felt pad, a piece of burlap or a handful of shavings. In the older days, when pins were turned by hand and a skilled man had to be put on the job, this homely method was followed extensively. The turner had turnings all about him, just as his chisels had removed them from the blank, and it was but natural that he scoop up a handful of these shavings to apply to the waxed pin. And it might be added that the luster brought out was not inferior to that which is produced today by an unskilled piece-worker who takes the machine-turned and smoothed pin and does nothing to it but apply the wax and pad.

Bowlers like pins to show up white. This preference is reflect-

CURTIS COMPRESSORS. HOISTS. CRANES. CAR WASH SYSTEMS. PORTABLE COMPRESSOR UNITS

Everlasting Team Work

The manufacturer of your spray painting machine has designed the gun, the air drier, the transformer of your painting equipment to do perfect work. But unless the air supply is free from excess oil and moisture, and is of adequate volume and pressure, best results cannot be obtained.

For this and other important reasons, leading manufacturers have enjoyed the co-operation of Curtis Engineers in the selection of the air compressors. As the result, Curtis is standard equipment for their paint spray machines. They have found Curtis *controlled splash system* insures adequate lubrication without excess oil entering the air supply to damage the finish or clog the filters. They have found Curtis compressors made by a reliable concern of 72 years of successful business experience representing the most in value, design, durability and quality.

See that your next paint spray equipment has a Curtis compressor.

CURTIS Pneumatic Machinery Co.
1977 Kienlen Ave., St. Louis, Mo.
5518 D Hudson Terminal, New York
Please send information about Spray Painting.
Name .....
Address .....

CURTIS COMPRESSORS

CURTIS PNEUMATIC MACHINERY COMPANY, ST. LOUIS, U.S.A.

ed in the manufacture of pins. The maple selected for the best pins is picked out of the lightest colored stock. And the effect is heightened by mixing the vegetable wax with paraffin, thus producing a polished pin in which the grain of wood stands out with crystal clearness, and its natural color is "thrown" almost to that of ivory.

Vegetable wax is also used on sanded articles that do not lend themselves to production methods. The principle is the same in these cases—a smooth surface to begin with, waxed by rubbing on or brushing with liquid, and then a hand-rubbing process.

Tumbling Finishes

Other wood articles are finished by tumbling in wood barrels along with shredded or pulverized wax, this work being done at a speed that will not bruise the articles, but at the same time getting a thorough application by keeping the goods in the barrel for a considerable time. There is not such a high polish obtained in this way, of course, as there is no heat—only the friction of the tumbling parts—but a very good and lasting finish is imparted for counter goods that sell in competition.

The pressure type of spray equipment is fast replacing the gravity type because the workman with the pressure outfit can make a much better showing.

No. 82 WATER WHITE LACQUER

For GOLD
For SILVER
For BRASS

A finish to depend upon. An economic lacquer made by pioneer lacquer makers. Send us your requirements.

Chas. Cooper & Co.

90 Worth St., New York
Works—Newark, N. J. Since 1857

Two Associations Merge

The joint meeting of the Paint Manufacturers' Association of the U. S. and the National Varnish Manufacturers' Association, held on the evening of October 11 at Washington, D. C., marked the passing of these two independent organizations and their merging into the American Paint and Varnish Manufacturers' Association.

During the forenoon the National Varnish Manufacturers' Association had held its 24th annual meeting and had taken action favoring such a consolidation.

In the afternoon of the same day the Paint Manufacturers' Association assembled for its 28th annual meeting and took similar action.

H. W. Rice, chairman of the joint nominating committee, appointed at the last meetings of the two associations, presented a ticket which was unanimously elected as follows:

President, Frank P. Cheesman; 1st vice-president, A. D. Graves; 2nd vice-president, J. S. Felton; secretary-treasurer, George B. Heckel; directors, Frank L. Sulzberger, Lawrence Phillips, F. M. Brininstool, W. R. Carnegie, H. A. Melum, R. W. Levenhagen, W. P. Alle, Harry A. Hall, E. H. Hancock.

Because lacquer spraying looks so simple, and is so easy for those that have been initiated, many people have the idea that it is a very simple process to turn out a beautiful job. Lacquer finishing requires skill and a knowledge of the product and its properties, the same as is required in good paint and varnish finishing practice.

This Section is devoted to the application, baking and polishing of finishes to be dried in ovens.

Baked Finishing

Leading articles on baked finishing this month include

Enameling Automobile Parts

By LEO. J. SMITH
Superintendent of Paint and Enamel at Olds Motor Works

Overhead Carriers in Paint and Enamel Department

Next month a series of articles will start in this section under the title,

"Modern Japanning Practice"

What's wrong with this picture?

IT shows the Worthington FEATHER (Reg. U. S. Pat. Off.) Compressor and the works in which it is made. But it doesn't tell the whole story. It cannot convey to you any conception of the high manufacturing ideals and refinements of design and construction embodied in Worthington Compressors. Similarly in this advertisement we cannot enumerate all the factors that contribute to the unexcelled operating results obtained where air for painting is supplied by a Worthington Compressor. The following are but a few of these factors:

Feather Valves—The lightest, most responsive and longest-lived valve ever devised for compressor use. Gives perfect contact, insuring high volumetric efficiency. No taps. No adjustments.

Special Piston Construction insures pure air free from oil.

Balanced Flywheel.
Counter-balanced Crankshaft (solid forging)
Forced-feed Lubrication.
} Mean high mechanical efficiency, smooth operation, no noise.

Cylinder and head thoroughly cooled—submerged in water-cooled type; effectively finned in cooled type to give large radiating surface.

WORTHINGTON PUMP & MACHINERY CORPORATION
115 BROADWAY, NEW YORK CITY
6732-2 Branch Offices in 24 cities

Enameling Automobile Parts

Superintendent of Paint and Enamel at Olds Motor Works describes the use of modern production equipment and methods in the cleaning and baked-enamel department

By Leo J. Smith

THE CLEANING of metal for enamel is just as important as the cleaning of an automobile body in preparation for a primer coat. Modern cleaning equipment permits much faster handling of material and insures a much better job than the old methods formerly employed.

I can remember we thought we had a fast production method when our process consisted of the following operations: passing fenders several times through a large tank of naphtha, washing the seams out carefully with a brush, blowing surface of fenders with compressed air; then wiping, sanding, and wiping them again.

Then, metal cleaners appeared on the scene and we had tanks with steam coils and hot water. Sometimes it was necessary to use both hot and cold water tanks for a rinse. This speeded up production considerably, but it was a mighty hot job for the men who had to work at the tanks. This method also eliminated the fire hazard that naphtha tanks had given us.

But the present day method of using washing machines, burn-off ovens and conveyors have put production up to a very high figure. Present methods produce very good results.

Production Cleaning

A 45-ft. washing machine and a 35-ft. burn-off oven will handle all the sheet metal parts for 400 cars in ten hours. A washing machine and burn-off oven combination eliminates the use of any metal cleaners in the machine. It is only necessary to use hot water in place of the cleaner, and the burn-off oven at 700-deg. F. will do the rest.

After coming through the burn-off oven the parts should be very

carefully cleaned; all bad scratches in the steel, trade marks and any rust should be sanded off. The fenders are then ready to be tack-ragged and put on the conveyors for enamel. They are not touched by human hands again until finished.

I might mention here that parts which are very rusty should be put through the muriatic acid pickle, neutralized in a soda or lime tank and, unless it is possible to enamel them at once, they should be oiled with paralan oil to prevent re-rusting. For the benefit of those who do not have at their disposal all the modern equipment, I am giving two metal cleaner formulas which have always worked very satisfactorily for me.

Metal Cleaner No. 1.

50 percent Tri-Sodium Phosphate.
25 percent Flake Caustic Soda.
25 percent of 58 percent Soda Ash.

Metal Cleaner No. 2.

50 percent of 58 percent Soda Ash.
40 percent Tri-Sodium Phosphate.
5 percent Soap.
5 percent of 76 percent Flake Caustic Soda.

Either of these cleaners will work in tanks or washing machines, and will handle successfully the light mineral oils commonly used on sheet steel.

Cleaning of Equipment

The equipment should be kept as clean as possible. Hooks for hanging the parts should be kept clean; oven and tanks of enamel should be cleaned regularly, particularly the first-coat tanks of enamel, which on conveyor systems where tanks are in glass enclosed rooms and the parts mechanically dipped, get and retain the dirt washed out from inaccessible places in the parts enameled. With some systems, the fenders are four minutes going through a tank of enamel so that there is ample time for the dirt to wash out.

In the system under my control, I clean 6,000 gallons of first-coat enamel every night and alternate the tanks so that no tank is used over 24 hours without a cleaning. We have four 11,500 gallon storage tanks underground. This affords fire protection as well as storage while cleaning. The valves on these tanks are controlled by fuse links and in case of fire the links melt at a temperature of 180-deg. F. and puts all of the enamel underground in 12 minutes.

Cleaning Material

For bringing the enamel back to the second floor again, I employ pumps that will pump 100 gallons a minute of first or rubber coat. Finishing enamel cannot be handled as fast because it is more viscous. In cleaning enamel I use steam-driven turbine clarifiers for a portion of the enamel.

I say "portion," for the reason that the clarifiers usually handle around 200 gallons per hour, this making them too slow for a large quantity to be handled in a short time, and furthermore first-coat enamel should not be clarified too fast, or it will throw out too much pigment. Some concerns refuse to clarify it at all for that reason, but I have done it for years with no bad results, but have had to reduce the speeds of machines.

After a tank of material has been let underground the dirt has a good chance to settle to the bottom, and it is the last 1000 of 1500 gallons in storage that I use the clarifiers for mostly. For the balance of the cleaning I resort to the use of large strainers and strainer cloth of about 60

mesh, and cotton filters. I usually alternate through the week with cotton filter so that at least twice a week the enamel gets practically the equivalent of a machine cleaning.

The cleaner the entire system is kept the smaller the number of rejects. Rejected parts are rubbed out with pumice and water, carefully cleaned up and put through the system again.

Ovens; Chain Speeds

There are two very good types of conveyor ovens at the present time—the A-type, or horizontal type, and the V-type oven. While I am using the A-type, I prefer the V-type. This puts the maximum heat at the peak of the oven and permits a gradual cooling off of the parts as they come out of the oven. It also permits an entire view of the oven at all times, as most of these ovens are equipped with electric lights and the work can be seen at all stages of the baking. They are also much easier to clean, not having as much structural steel exposed.

With chain speeds running from 15 to 42-in. per minute and the length of bakes from 20 minutes up, it requires a very high heat maintained steadily and carefully watched.

There should not be more than a 10-deg. F. fluctuation in the heat, one way or the other, after the proper heat has been determined. This brings us up to the kind of heat—gas, oil, electricity. Oil is by far the cheapest and, having used all three, I am satisfied oil is just as clean as electricity for heat. It is safer so far as fire is concerned, and the maintenance of equipment is low if it is properly taken care of; also, operators do not have to be as skilled as for electricity.

Oven Heating Cost

The following figures may sound foolish, but they are correct. It cost us $6.20 per 1,000 lbs. of metal to enamel with electric heat and 75c per 1,000-lbs. of metal with oil heat. We paid 2c net, per k. w., for electricity. The average oil burner consumes one gallon of oil per burner per hour, and a 45-ft. oven should have at least nine burners. Oil costs an average of 5½c per gallon or 49½c per oven per hour. These figures are approximate and are based on a conveyor system with a steady flow of work passing through the ovens at an average temperature of 490-deg. F.

The average thickness of enamel per coat for solid covering and durability should be .0005 to .0007-in. per coat. For an average on two-coat work, all high heat enameled parts per automobile will require .20 gallon of first coat and .27 gallon of finishing enamel.

Making a Tack Rag

To prepare a tack rag, take a yard of cheap open weave cheese cloth, saturate same with a cheap rubbing or copal varnish, wring out, open up and spread out and expose to heat or the sun until same is tacky, fold into a pad; when not in use enclose tack rag in a moistened chamois skin or cloth. Make a new tack rag every day. Dried out tack rags make ideal varnish rubbing pads.

Do not leave lacquer or solvent uncovered or exposed, nor stored near heat or in any damp place. The lacquer should be thoroughly mixed and stirred before adding solvents.

Overhead Carriers in Paint and Enamel Department

Describing and illustrating typical small unit of equipment for mechanically handling metal parts being finished by the dipping process followed by oven baking

By C. A. Rasey

WHERE dip painting, enameling and baking operations are included in the manufacturing process of a standardized product made in large quantities, it is often a point of good management to install overhead equipment for handling and transferring the parts in process. A typical installation that has proved very effective in reducing costs and improving upon old methods is found in the painting and enameling department of the Aurora Steel Products Co., Aurora, Ill.

The plan of the "Over-way" carrier installation, as supplied by the Richards-Wilcox Mfg. Co. of the same city, appears in Fig. 1. The entire outfit of equipment consists of the following:

A dipping tank, sunken into the ground;

A drain board over which the dipped parts or articles hang until the excess paint drains off;

Baking ovens to dry the product after it has been painted;

An overhead trolley track unit, with accessory curves, switches and supporting brackets, connecting the dipping tank, the drain board, and the baking ovens;

Trolley-trucks with carriers suitable for carrying the product to be painted;

Automatic air hoist for submerging the product into the paint tank, and an agitating

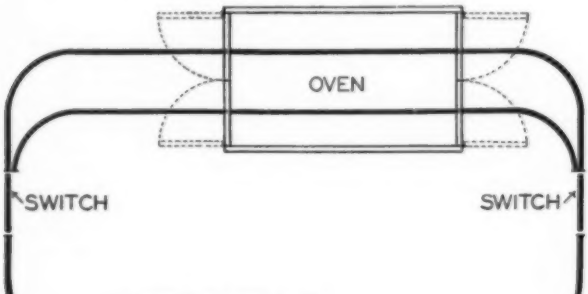


Fig. 1—Plan of mechanical handling and process equipment which has effected remarkable economies.

Fig. 2—View of oven and overhead carrier trackage.

pump to keep the paint uniform in color and ingredient.

The picture marked Fig. 2 gives a comprehensive view of the outfit; the dipping tank and drain board are at the extreme left; loaded carriers of the freshly painted product are at the left-center ready to enter the baking ovens; the baking ovens are in the center; loaded carriers of painted and baked product, ready for the packing department, are at the right.

In operation, a loaded carrier is stopped above the dip tank and made ready for dipping. The air hoist actuates an automatic dipping device by means of which the section of track, from which the carrier is suspended, is lowered with its load and the load submerged in the sunken paint tank. Immediately after submerging, the unit is raised again to its original position and moved over the drain board.

The view in Fig. 3 shows overhead carrier tracks leading directly into and through the oven; this view also reveals part of the dip tank at the right.

The completeness of this system, even to the little automatically-operating doors in the trolley tracks which open to allow the hanger to enter the oven, and close by gravity to prevent the escape of heat and fumes from the closed oven, and its practical utility and economy, are strikingly set forth in a statement of the user in which it is declared that the installation has been the means of reducing labor in the enameling department approximately 50 percent, and effecting a saving of 10 percent on paint, due to better draining.

Quoting from the users' letter:

"The overhead carrier system has increased the capacity of our carrying facilities to such an extent that production in the paint

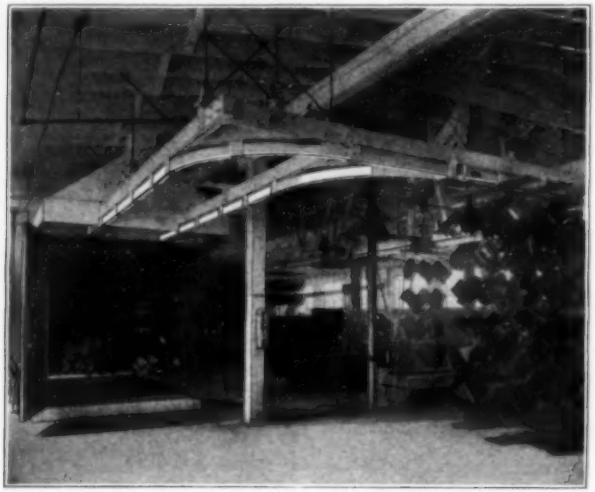


Fig. 3—Trackage enters oven at left; notice part of dip tank at right.

department is no longer a matter of how much material can be painted in a day, but is only limited to the capacity of our bake oven which is used in connection with the system.

"In other words, before we installed the system, a small bake oven would take care of this material more rapidly than it could be loaded and unloaded, but with the overhead carrier system even the large oven cannot bake the goods as rapidly as we can paint them, and we load the oven with less labor than formerly.

"In addition to increasing our capacity and reducing our labor cost, we are obtaining a better finish on our product than ever before.

"We are able to keep the work in process from congesting our paint department—a department which was always behind previously. All our carriers being overhead, we can keep the floor around our paint department clear and give our workmen more room."—From *Door-Ways*, published by Richards-Wilcox Mfg. Co.

Cadmium Plated Metal

In reply to the question of R. W. in October issue, cadmium plated metal, which has not been buffed or polished, has a slightly roughened or etched surface, allowing paint and japan to stick to it quite well, provided the temperature is kept below, or does not exceed about 225 degrees. F.

If the cadmium plated work has been buffed or polished the enameling difficulties are greatly increased, because there is little "foothold" for the japan to take hold, and the surface of the metal has a rather greasy film which

prevents the japan or paint from taking as it should.

Cadmium is somewhat similar to zinc, aluminum, and the other more "greasy" metals. This probably is the reason that trouble is experienced, the same as in baking finishes on die cast parts which contain lead, tin, zinc or aluminum. That difficulty is experienced in enameling cadmium plated parts at a high temperature, is due to the fact that small quantities of air, gas, grease, or other materials are forced from the metal during the baking process and prevent the paint from sticking.

The first step to take in finishing cadmium plated articles is to make sure that the surface is thoroughly clean. A weak caustic solution can be used for this to good advantage, inasmuch as the caustic not only absorbs the grease and oil, but also attacks the metal slightly.

Care must be taken, however, to leave the article in such a caustic bath for only a few seconds; otherwise the caustic may seriously attack the metal.

Some concerns use a naphtha wash in place of the caustic bath, but if the naphtha is not changed frequently to prevent the concentration of oil and grease from becoming so great as to deposit a thin film on the work, this naphtha bath will have little effect.

Also, the wiping cloths must be changed frequently, or they will absorb enough oil and grease to allow a small quantity to be deposited on the metal again while wiping off the naphtha.

Another precaution which would be well worth trying would be to pre-heat the castings at a temperature of about 15 or 25 degrees higher than that at which the finishing material is to be baked, and hold this temperature for a period of about 30 minutes or an hour. This pre-heating will drive out any small quantities of grease or oil left on the casting and will also cause any small particles of gas or air contained in the metal to expand and break through the surface.

If the finish is applied immediately after this pre-heating operation, and baked at a temperature slightly lower than that used in the pre-heating, we believe the finish will adhere very well provided the metal is thoroughly cleaned of oil, grease and other foreign materials.—I.F.

To assure results consistent with the claims of lacquer and air brush manufacturers, it is necessary to learn to lap strokes properly with the spray gun.

Are You Interested in Cutting Down Your Finishing Costs?

If so, let us quote you on finishing toys, wood novelties or any products you may send out to be finished. We specialize in dipping and spraying and can quote attractive prices.

SOUTH SHORE FINISHING CO.,
138 Old Colony Avenue Wollaston, Mass.

Eclipse

Low pressure and volume

Air Brushes

are endorsed by leading manufacturers

Questions and Answers

This service department is conducted to meet the readers' need for prompt information on specific problems, and to give others an opportunity to review the questions and to offer comments, suggestions or answers

For Exposed Oak Doors

Replying to Mr. J. Kuhn who, in Oct. issue of this journal, says he has tried many finishes for outside oak doors and windows, but has not found one which would stand more than a year without checking or cracking, and allowing the moisture to enter and turn the oak black. I am at a loss to understand the cause of his trouble if he has been using good materials, and using them in the correct way.

There may be something about the atmosphere peculiar to his locality. There are some things that I would never use on an outside door; one of them is shellac, although shellac has many uses for which it is hard to find a good substitute.

Outside oak doors should be filled with a filler which contains a slightly larger proportion of oil than is usually used for inside work. The filler should be allowed to dry thoroughly before succeeding coats are applied.

The succeeding coats should not be of mixed materials, by which I mean they should be either all varnish or all lacquer. I would not use any kind of surfacer beneath the finishing coats. If varnish is used it should be the best for outside work. These varnishes are long in oil, and dry slowly, but I believe they are more durable than are the quick-drying varieties.

Lacquer is now considered to be the most durable finish made, especially when applied to wood. I see no reason why a finish of this material should not last a long time if it has any protection whatever.

I have been wondering if the trouble is in the wood itself. If these doors are what is known as "solid" oak, the shrinking and swelling of the wood under atmospheric changes may be responsible for the cracking of the finish. The modern door is made of plywood, and it does not swell nor shrink. On these doors, the finish is much more durable than it is on the ordinary "solid" door. —W. J. Kitely.

Suitable Piano Dressing

Referring to C.E.W.'s question in October issue probably one of the best methods of cleaning a dull-finished piano without causing a luster to appear on the finish, is to make a strong solution of soap suds, using a mild soap such as castile or Ivory; mix with this a small amount of fine pumice stone and apply it to the surface to be cleaned; wipe it off with a damp cloth and follow up with a soft, dry one.

The soap solution will not need to remain on the surface long to dissolve the oil and, of course, there will be no greasy appearance left after this treatment.

Probably some of your difficulty in the past has been due to the use of an oil which contains too much greasy constituents that

MECCO

LACQUERS

AND

LACQUER ENAMELS

BEST OBTAINABLE

FOR ANY ARTICLE REQUIRING A DURABLE FINISH

Metal, Wood or Composition

AUTOMOTIVE and OTHER TRADES

We solicit your inquiries

THE MINER EDGAR CO.

110 WILLIAM ST.

NEW YORK -:- NEW YORK

cannot be wiped off very well. Some of the refineries make so-called "debloomed" oils which contain very little grease and which can be easily wiped off the work with a dry cloth.

Another remedy that could be used, no doubt, would be the application of a small amount of wax after you have removed the oil and grease from the piano case. This would merely need to be put on and then wiped off, and should not be polished.—I.F.

As C.E.W., who in Oct. number of this journal, asks for a method of cleaning dull-finished pianos but does not say whether the finish is a dull-rubbed finish nor what other kind it is, it is difficult to solve his problem. He speaks of using "oils mixed with benzine," and "alcohol with oil," and of finding these unsatisfactory.

I have an idea that if he would use alcohol without the oil he would be able to solve his problem. This method is called "spiriting off," and is so familiar to the piano trade that I cannot understand his not having tried it. However, as I have used it for cleaning almost every kind of finish without finding that it raised a gloss, I see no reason why it should not answer in this case. While it will not raise a gloss on dull finishes, it does greatly improve polished finishes. The method is as follows:

Sprinkle or spray on a soft cloth a quantity of alcohol—just sufficient to make the cloth damp. Fold the cloth, wring it tightly and allow it to stand a few minutes to permit the alcohol to become uniformly distributed throughout. With this damp cloth, wipe up the oily surface; use it only for finishing off after as much of the oil as possible has been removed by other means. Wipe lightly with a circular motion. The main thing to guard against is too much alcohol on the cloth, as that would burn and smear the surface.—Y. C. Sinclair.

Lacquer First Coat on Soft Woods

In reply to the inquiry of D. & Son in Oct. issue, page 72, so far as I know, the best material for first coating soft woods, so as to prevent the grain of the wood showing through when finished with either clear or colored lacquer, is a clear lacquer primer manufactured by one of the larger lacquer manufacturers.

This material makes use of a pigment of a transparent nature incorporated in a lacquer vehicle of the proper type so that this priming coat fills slight imperfections in the wood, dries quickly, adheres tenaciously, sands easily and holds out succeeding coats of lacquer.

The primer has a cloudy appearance in the package, but when applied to the wood it is perfectly transparent and does not obscure the grain. This clear lacquer primer resembles somewhat the varnish-pigment first coats formerly used quite extensively on chairs and other work, except that this lacquer is built on a nitro-cellulose base, which gives it quick drying and durability.

The primer can be used clear, or if a colored lacquer finish is to be applied, a small quantity of the lacquer enamel can be added to the clear primer for the first

coat, so as to give some hiding power to this coat at the same time that it seals the wood and acts as surfacer.

This lacquer primer will air dry in four or five hours so that it sands even more freely than shellac. It stiffens any fibers that may be present on the soft wood, and holds them firmly so that when sanded, the wood is made quite smooth and the fibers are not roughened up again with succeeding coats of lacquer.—E. M. Johnson.

Walnut Gum Filler

In October issue of this journal, G. S. P. asks for a formula for a combination filler for walnut on gum. I suppose what he means is a combination stain and filler. I have done a great deal of experimenting along this line, and the best I have yet discovered is as follows:

Mix together equal parts asphaltum varnish and a good grade of rubbing varnish, and thin with turpentine to the desired depth of color. As gum is a very close-grained wood, it requires very little to seal the pores, and this usually can be done with stain made according to the above formula.

If there is much end-wood to be sealed it would be a little more difficult, and would require the addition of some silex to the stain —about 1-lb. of finely ground and sifted silex to each half gallon of the asphaltum-varnish mixture before it is thinned.

If silex is added it should stand 24 hours between the time of making and using. If the stain shows a little cloudy on the end-wood when used with the silex, reduce the quantity of the latter. It will improve the finish, and perhaps decrease the ultimate cost of the work, if the surface is given a rub with steel wool or fine sandpaper after the stain is dry, care being exercised not to cut through the stain.—O. L. Toman.

Why Lacquer Dries Slowly in Spots

Without knowing the details of how J.N.W. builds up a finish on the desk tops he mentions on page 72 of Oct. issue, it would be difficult to give a complete description of the cause of the trouble. If you use oil stains this may be partially responsible for your trouble, due to the fact that more of the stain is absorbed in some spots where the wood is more porous than in others, which consequently is less dry when the lacquer is applied.

Likewise, the filler might have some effect on this drying in spots, provided the wet spots correspond with the pores of your wood where more of the filler is present in the pores, or where it has not been rubbed off so thoroughly. This, of course, applies only in case the filler has not been given sufficiently long to dry, and is not of the right tvpe, before the lacquer is applied.

If you use shellac over the filler, it is possible that this is the cause of your trouble, especially if the shellac has stood for some time before it is cut into solution, and if it is not applied absolutely uniformly so far as thickness of coating is concerned.

The most likely cause of your trouble, however, is from the presence of grease or oil from one source or another, whether on the surface of your desks before the lacquer is applied, or else mixed

with your lacquer as it comes through the spray gun.

Dirty, greasy hand marks caused by workmen handling the desks before they are lacquered would be one cause of this trouble. Another cause, which is often present, is the presence of oil in your compressed air due to its escape from the compressor around cylinder rings. This oil would be condensed in the lower portions of your air line and eventually will be forced through the spray gun, and will escape from the nozzle of the gun in little globules or chunks which will come out periodically. When mixed with the lacquer, these traces of oil will prevent it from drying hard.

To overcome this last trouble, of course, you should install an auxiliary separator near your spray booth to collect any oil or moisture that may be present in your air line. This separator should be drained daily to prevent the oil from accumulating to a point where it will be forced through your spray gun and onto the work.—S. C. Mansfield.

Unless there is something about it which at present is not apparent, the matter is not a serious one, as it is more or less common to all finishing materials. One will notice that all flat-drying materials become flat in some places much more readily than they do in others. It may be caused by a slight difference in the wood, or it may be that one part has a slightly heavier coat than other places. Any of these would contribute to the slowness in drying, but the result can hardly be considered serious. The result might be serious if caused by crowding the coats over the filler before the latter is dry, or some other similar cause. J. N. W. will do well to investigate for himself, or give more details of his method of doing the work.—L. T. Felson.

Why Does Enamel Check?

We are unable to find a white enamel that doesn't check when water stands on it. The water comes from metal refrigerators sweating on such days as the air is heavily loaded with moisture.—C.R.Co.

There are several enamels on the market which will not check when water stands on them, and by getting in touch with various manufacturers who advertise in this magazine you will undoubtedly be able to find one that will meet your requirements in every way. If you have never tried white lacquer enamel for this purpose, we suggest that you do so, as we understand this is the most water-resisting product that has thus far been used on refrigerators.—I.F.

Mixing Shellac

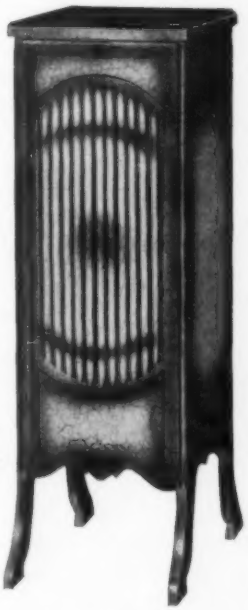
Referring to the S. C. Mfg. Co.'s inquiry in October issue regarding shellac, if you buy the gum shellac and mix it yourself, mix it in an earthen vessel because metal causes the shellac to discolor. Shellac is mixed in various cuts—from 2 to 5 lbs. to the gallon of solvent. If it is bleached shellac, pour the gum into the solvent and stir until thoroughly dissolved.

Newark Krakle

One of the greatest developments in recent years, contributing

SALES APPEAL to Your Product

A unique decorative feature put on at no greater production cost than the ordinary finishing coats.



A new finish for any surface furnished in different color combinations to produce many beautiful effects.

Easy to apply—Dries quickly.

Particularly adaptable for wood and metal furniture, fixtures, radio cabinets, novelties, toys, and many other products.

If you are looking for something distinctive, to liven up your line, ask us for further information.

NEWARK VARNISH WORKS, Inc.

NEWARK, N. J.

Krakle - Lacquer - Varnish - Paste Filler - Stains

If it is orange shellac in flakes, pour the gum into the solvent and stir at intervals of 5 or 10 minutes until the flakes are all dissolved. If the gum is permitted to settle at the bottom of the vessel before it is all dissolved, it is apt to form into a mass like rubber, after which it is difficult to dissolve. Strain this shellac before using.

The best commercial solvent for shellac is denatured alcohol, though there are many substitutes which give fairly good results.

For thinning lacquers I would suggest that you take this matter up with the makers of the lacquer you use, and follow closely the directions you receive from them.—Carl D. Seymour.

Novelty Furniture Breakfast Room Suites

can be

COMPLETELY

LACQUER FINISHED ECONOMICALLY

It is being done through the use of

ROXALIN WOOD SEALER

Obtainable in 9 colors —also transparent

FILLS WELL
SANDS EASILY
HELPS COVER

SPEEDS THE ORDERS OUT!

ROXALIN FLEXIBLE LACQUER CO., Inc.

Manufacturers of Lacquer Products Exclusively

105-109 Seventh Ave.

Long Island City, N. Y.

Where the Finish Counts use "Roxalin"

For That Exposed Oak

Referring to the inquiry of J. Kuhn in October issue, there is very little you can do in the way of applying a varnish or lacquer to your natural oak doors and windows to prevent checking recurring, unless you remove all of the old finish.

If you varnish over the old checks they are likely to reappear within a short time regardless of the quality of the finish used. The only safe way is to take off all of the old finish, refill the oak wood with a paste wood filler, let it dry at least 48 hours, then finish with two coats of spar varnish, allowing two days between coats of varnish.

If you apply coats of spar varnish more frequently than this there is a possibility that the bottom coat will not be thoroughly oxidized all the way through before the next coat is applied. As a result the top coat of varnish in time will become more thoroughly oxidized, harder and more brittle, than the bottom coat; then, with a change of temperature the film will check and crack. This, of course, will allow the moisture to get in, and the damage will be started all over again.—I.F.

Stains For Lacquers

In reply to S. C. Mfg. Co.'s inquiry in October issue, page 72, oil stains which contain creosote, stearic acid, heavy oils, spirit soluble colors, oil soluble colors, or many other materials—these prevent the lacquer from drying properly and permit the color to be bled out. Also, where an oil stain is used under lacquer, it sometimes causes the precipitation of the nitro-cellulose from

the lacquer, which may cause blushing. Sometimes the lacquer will not stick satisfactorily to an oil stained surface.

Certain shades of walnut and oak oil stains can be used safely under lacquer, but as a general rule, it is better to stick to water stains under lacquer, and make sure that these are thoroughly dry before the lacquer is applied.

The filler for use under lacquer must be chosen quite carefully also, for not all fillers can be used safely because of danger of the filler turning gray in the pores, or in other ways affecting the appearance of the finish after the lacquer is applied.

The filler must also be allowed to dry very thoroughly before any lacquer is applied over it.

Several of the better known lacquer and filler manufacturers now have specially-made fillers that give very satisfactory results for use under lacquer.—I.F.

Most oil stains are not suitable for use beneath a lacquer finish, but an asphaltum stain can be safely used on gum for making walnut finish. This stain is prepared by mixing together equal parts of good furniture varnish and asphaltum varnish, and thinning with turpentine. This can be applied with either the spray or brush. With the use of this stain there is no need to fill the wood.

The most approved method of mixing water stains is to first decide the exact proportions of water and stain powder required to give the desired depth of color. Carefully weigh the powder and measure the water so as to have exactly the proportions required. Heat the water to approximately 175 degs. F. It is advised not to

Biax Flexible Shaft

Saves Elbow Grease

The old way of sandpapering with the sheet in hand is indeed obsolete now.

The Biax special sandpapering equipment with the drum having curved working surfaces on which the sandpaper sheet, size 7x13", just fits, enables the mechanic to do an hour's work in a few minutes.

The drum is equipped with ball bearings throughout and carefully balanced with double hand pieces. You will be surprised to know how cheaply sandpapering can be done with this equipment.

Write us for Catalogue R

BIAX FLEXIBLE SHAFT CO.
136 Liberty Street
New York City

use the water at boiling point, as this cooks the stain too much.

When the water is hot enough for the purpose pour it into an earthen crock; then pour the stain into the water while stirring the liquid. Continue stirring until the powder is thoroughly dissolved. An earthen vessel is suggested because some stains will eat into metals, and the metals in turn react upon the stain.

I would advise buying the filler in paste form, from any of the advertisers in this journal; follow the maker's instructions as to thinning. Different woods, such as oak and birch, require fillers of vastly different consistency. If the instructions which accompany the filler do not explain this in sufficient detail to meet requirements, I would suggest that you put the matter directly up to the makers who will be only too glad to render you every assistance.

One thing I would mention here is to keep the filler stirred frequently to prevent the pigment from settling at the bottom of the vessel. If this is not attended to, part of the filler will have too much oil, and part will not have enough to bind it prop-

DACONITE
A
Three
Point
Lacquer

1 It's priced right for its quality and the things it was made to do.

2 It does the things it was made to do, better than others are doing it.

3 It does these things without the necessity of diluting in spraying.

All of which are our claims.

Your proofs lie in the free tryout can. Send for it and the prices.

JAMES B. DAY & CO
224 WEST SUPERIOR ST.
CHICAGO

Manufacturers of
Wood Finishing Materials

erly in the pores, with the result that instead of the filler holding up the finish, it will absorb it and cause what is known as sunken pores.—Edw. C. Faber.

Practical Filler Practice

Replying to S. G. P.'s inquiry under the above heading in October issue, the practice of dipping paste wood fillers on chairs or other objects is not sanctioned by the higher quality paint and varnish manufacturers. The dipping process does not allow the filler to be deposited deeply into the pores of the wood, and the entrapped air driven out before the filler sets up with a skin film on top. The results secured when the filler is applied by dipping or spraying are seldom if ever as good as when it is applied by the brush.

Silex is a heavy pigment, and is used in all of the better grade fillers, but it has a decided tendency to settle toward the bottom of the container. If the filler were dipped, it would be necessary to devise some means of constant agitation.

Some people might recommend the blowing of air through the filler and depend upon the bubbles to keep the pigment in suspension. This has the drawback, however, of partially oxidizing the oil and other materials in the filler.

The best system of agitation would be a mechanical one, making use of an agitator similar to a screw propeller in the bottom of the tank which should be kept in motion all of the time to prevent the pigment from settling hard.

Probably not more than 8 or 10 lbs. of filler to one gallon of

What is a GOOD Finish?

OUR Service Department asked ten people who *should* know this question. *"What is a good lacquer finish?"* The answers though correct were surprising in that ONLY THE TECHNICAL SIDE OF THE QUESTION WAS CONSIDERED. According to the answers a good finish should not peel, crack, chip, etc. It should be smooth and free from blemishes—Not one answer said, "It should sell the goods!"

* * * * *

ALAKA is the practical Lacquer in that it is made to sell the goods. Our service men have some finishing ideas which they will be glad to discuss with you without obligation. Write for a new booklet by our Service Department called "Finishing Facts"—it is free.

LACQUER & CHEMICAL CORPORATION

214-224 Fortieth Street
Brooklyn, N. Y.

WHY use expensive wood dyes?

WHEN you can get a better finish at less cost

Dakalite
Dye—Stains

are: Fadeless
Artistic
Convenient
Economical

DAKALITE dyes respond admirably to the various demands of wood and fashions—highlighting or shading; straight uniform color; light or very dark.

They do not dissolve in shellac, filler, oil, wax, varnish or lacquer, hence can be used under any of them. Can be applied by sponge, brush, spray or dipping, and in any strength or shade desired.

DAKALITE is absolutely harmless and, being soluble only in water, can be easily removed from the operator's hands, brushes, spraying equipment, etc.

Send for a sample—test it in every conceivable manner and with each kind of wood you use. Employ any filler and finish—then you will understand why DAKALITE is rapidly achieving such popularity.

Get your sample today—it's free

DAKALITE PRODUCTS CO., Inc.
Minot, North Dakota

benzine would be permissible by the dipping method, and still have the filler drain off satisfactorily.

When paste wood filler sinks out of solution and appears dead and lifeless, it is better to throw it away than to attempt to rejuvenate it. Filler which has settled in this way after being reduced, either has a tendency to be fatty and slow-drying, or else most of the binder has been used, leaving little but thinner and pigment in the container.

In the first case, the filler will not dry well, and in the second case, the filler will not seal the pores of the wood as it should. The pigment is likely to show a grayish cast in the pores, due to absence of color. It is much better, under ordinary conditions, to reduce the filler fresh every day and discard that portion which is not used at the close of work in the late afternoon.

If a tank is used for dipping the filler, it is very essential that a tight fitting cover is placed on it whenever the filler is not in actual use, and the agitator will have to be kept running at night as well as day to prevent the pigment from settling out hard. —I.F.

In answer to S.G.P., I would say that there are many ways of handling stock at the dipping tank. Much depends on the quantity of stock to be dipped. In some shops the stock is handled by means of overhead carriers after it is taken from the tank; in others the tank is placed between two drain boards, and while one board is being filled the other is being emptied and made ready for refilling.

DOLAN'S "444"

Lacquer Shading Stains

Embody the perfected elements for the delicate high lighting so much in vogue on finer furniture at the present time.

Smoothness in spraying —do not run or bleed.

Try them.

DOLAN'S "555"

Lacquer Fillers

Characteristic of Lindeman "Unquestionable Quality" the "555" Lacquer Fillers are dependable—do not bleach or blush. Are rapid drying. Pores are permanently filled. They will meet your exacting requirements.

"Unquestionable Quality"

Stains -- Fillers -- Shellacs -- Lacquers

HARRY J. LINDEMAN & CO.

1832 N. Laramie Ave.

CHICAGO, ILLINOIS

1816 CHEMICALS *1926*

"Over a Century of Service and Progress"

BUTYL PROPIONATE

The Economical "High Boiler" for Brush Lacquers

Manufactured by the Wilbur White Chemical Co.

Sole Selling Agents

INNIS, SPEIDEN & CO.

INCORPORATED

48 CLIFF STREET NEW YORK

BRANCH OFFICES:

Chicago Philadelphia Boston Cleveland Gloversville, N. Y.

PE-CO-LAC
LACQUER

Give this lacquer a trial on a small job. You'll come back for more.

Detailed Information Upon Request

PECORA PAINT COMPANY
4th St. & Sedgley Avenue
Philadelphia, Pa.

FINISHES
ENAMELS LACQUERS VARNISHES
Are made in a Modern Plant Devoted to making Industrial Finishes only.
THE KAY & ESS CO.
DAYTON, OHIO

The great difficulty with this method of filling is to keep the pigment suspended in the liquid, so it is available when the stock is dipped. The only real practical method I know of is to stir frequently from the bottom with a broad paddle, so the pigment in process of settling will rise to the surface or find its proper place in the liquid.

Gum is a wood that requires very little filler to seal the pores, on account of it being so close-grained. Five pounds of paste filler to a gallon of benzine will fill this wood perfectly, but in these proportions the benzine is apt to have a deteriorating effect on the oil in the filler and cause it to lose its binding qualities. For this reason, when filler is made very thin a small quantity of linseed oil and dryer should be added to the filler before it is reduced, in order to neutralize the excessive thinning.

A mixture of one-third drier and two-thirds oil added in the proportions of one-half pint of the mixture to each gallon of benzine to be used, will greatly improve the binding qualities of the liquid without rendering it oily when cleaning off the surplus.

"When filler sinks out of solution and appears dead and lifeless, how can it be revived?" This is largely the silex pigment. It can be used again by mixing with oil and driers in the proportions named above. There must be enough of this mixture to bind the pigment thoroughly together when dry.—M. B. C.

Finishers have accepted the new systems and lacquer is now taken for granted, like paint and varnish.

Apply Lacquers *and* Enamels *with the* BINKS SPRAY GUN

Base coats, varnishes, enamels and lacquers are quickly and easily applied with Binks—"The Master Brush." Each sprayed coating is even, uniform, and free from defects. The BINKS Spray Gun is fast. Takes large flat surfaces either vertically or horizontally. Works close to the surface preventing evaporation. Material lays evenly.

The "Strait-Port" Nozzle, exclusively built into the BINKS Spray Gun, prevents cloggings. Time-saving advantages quickly earn the cost of this gun.

Complete Finishing Equipment

Every Binks accessory, to complete finishing equipment, has been developed to the highest efficiency. And when we say that we can reduce the cost of finishing done with the average equipment, we are seeking an opportunity to prove it. Write for details.

BINKS SPRAY EQUIPMENT CO.

Dept. L 3114 Carrol Ave., CHICAGO

Offices in Principal Cities

KESSCO PRODUCTS

Solvents
and
Plasticizers
for the
Lacquer Industry

Our chemists are advisory experts, dependable for counsel and co-operation in your works problems.

Write for our attractive prices. Also let us tell you how quickly we can furnish our products in practically any quantity.

KESSLER CHEMICAL COMPANY
ORANGE, N. J.

Filler Mixtures

In what proportion should Marietta paste filler, walnut shade, be mixed for best results under lacquer, on mahogany?—C.F.M.&Co.,Inc.

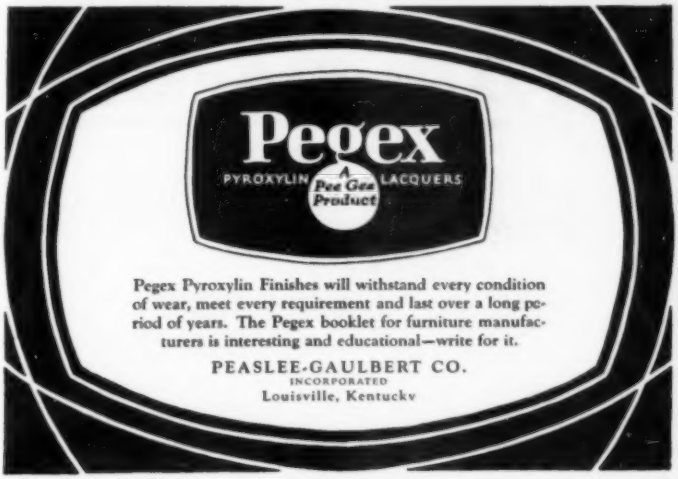
The proportion of filler to be used on walnut or any ordinary open-grained wood, such as oak and mahogany, is from 9 to 10-lbs. to the gallon. Some people use less—from 8 to 9-lbs., but we find that most of the finishers prefer to use a little more than a little less, consequently it averages very near 10-lbs. to the gallon of benzine.—The Marietta Paint & Color Co.

Is It Profitable to "Mix Your Own?"

We wish to request some information of you regarding finish in enamels and undercoats. Some of the finishing material manufacturers contend that it is cheaper to buy finishing materials in paste form, operate a small mill and do our own mixing. As you know, we are buying our finishing materials already mixed. I would be glad to have your opinion on the matter.—(A Manufacturer of Juvenile furniture in Indiana.)

Your dilemma, as outlined in Bulletin No. 38 of INDUSTRIAL FINISHING, has always presented an interesting problem. Inasmuch as your city is somewhat outside of our sales territory, we have no immediate ax to grind, and give you herewith our views.

Where the quantity of enamel and undercoat used in a reasonable period is such as to warrant the user buying in lots of 12 one-



Pegex Pyroxylin Finishes will withstand every condition of wear, meet every requirement and last over a long period of years. The Pegex booklet for furniture manufacturers is interesting and educational—write for it.

PEASLEE-GAULBERT CO.
INCORPORATED
Louisville, Kentucky

No. 125 NOE-ODOR METAL LACQUER

The name of this article speaks for itself and was designed for the can manufacturer to be used as a coating for the interior and exterior of candy, cake and other cans. This product dries hard but not brittle in about fifteen minutes and leaves no objectionable odors of any kind. Our Lacquer aniline colors mix readily with this Lacquer and produces a variety of tints. Can be reduced with No. 300 Lacquer Thinner.

The LASCO SHELLAC & LACQUER CO.
Baltimore Maryland.

Kindly mention INDUSTRIAL FINISHING when writing advertisers

YAR-PA-CO

PRIMER

THE
PERFECT
LACQUER
PRIMER

Write for a free sample

YARNALL PAINT COMPANY
PHILADELPHIA, PA.

IF THE lacquer you are using gives a smooth, tough, adherent film, you can be quite sure that it contains a sufficient amount of

Butanol

and its derivatives and that you will retain the good will and satisfaction of your customers.

COMMERCIAL SOLVENTS CORPORATION

Sales Offices:

17 East 42nd Street
NEW YORK, N. Y.

Aldwych House
Aldwych, W. C. 2
LONDON, ENGLAND

Terre Haute
INDIANA

Plants:—Terre Haute, Ind., and Peoria, Ill.

gallon cans or more, or even in six one-gallon lots, we believe it is to one's interest to buy those things ready made by the enamel manufacturer.

We have never considered it to pay a user of enamels to make his own, whether from dry color or paste, unless he had sufficient volume to warrant keeping a practical enamel maker busy all the time. And even in such a case he would have waste and spoilage which is now absorbed by the enamel manufacturer.

Where you use but little of a color, perhaps a quart or a half-gallon of a special shade, it is cheaper to buy that shade already made in color and oil, if it can be so obtained, and add a little mixing varnish; or if you have a good color man, let him make the tint from colors in oil, rather than take the time necessary to get this small quantity from the manufacturer who, in turn, would be put to a cost far beyond that which he could ask you to pay for the service.

Your business is toys, and the finishing of them is an incident of their manufacture. Enamel-making is quite a separate business. Just as you would not undertake to make toys if the production were not to be of sufficient volume to warrant it, is it not all the more reasonable not to undertake to make your enamels or half make them, when you can get service from manufacturers who make such things their business?—Hilo Varnish Corporation.

Motor Car Wood Moldings

Please inform me on bringing up mouldings of automobile windows in natural wood color, after the old material is completely

"PARAMET"
(ESTER)
LACQUER GUM

Increases adhesion. Makes for greater gloss. Insures maximum toughness in nitro-cellulose lacquers.

Manufactured by
Paramet Chemical Corp.
LONG ISLAND CITY, N. Y.

The ORIGINAL LIQUID MASKING for the protection of surfaces against lacquer overspray.

PROTECT-O-LAC
"Better Work in Less Time"

It simply combines with the overspray to form a film which strips off easily—the surface is then washed. Invaluable in keeping spray-booths clean—a very important element in furniture spraying. Send for a can—on trial.

Prices:
Half-gallon Can.....$3.25
Gallon Can..... 6.00
Money-Back Guarantee.

Several territories open to distributors.

Continental Corporation
Roosevelt Bldg.
Washington and Wells Sts., Chicago

KNITTEEN
Varnish Restorer

re-surfaces old varnish, closes cracks and checks permanently, restores color and builds up shrinkage.

Dries quickly with a hard, lustrous surface.

Before applying lacquer over old varnish be sure to first coat the surface with KNITTEEN.

$5.00 per gal. F O B New York
Trial Quart Postpaid, $2.00

THE CORLEAR PRODUCTS CO.
459 E. 147th St., New York City

Satinite Colors

In liquid form, ready for the spray or brush, in over 40 popular shades, offer you the most satisfactory line for the production of colored furniture combinations so much in demand.

Beautiful, Fast, Durable and Safe with 15 years of real service to recommend them.

Write for information, or better still, let our service man show you what these materials will do.

STICKNEY COLOR CO.
Manufacturers
Satin Finish Products, Coach Colors, Varnishes and Lacquers
INDIANAPOLIS, IND.

burned off. What is the best material to use and method to fill the pores, and grain of the wood, on colors outside of natural wood. Of course, there's no difficulty encountered, but I would like to know if there is some kind of a transparent filler that could be used, or the other way around, I might say a filler that wouldn't show or be too conspicuous under a transparent coat, such as orange shellac, or ossified lake and varnish mixed together.—E.P.

Most garnish mouldings along the windows in closed bodies are made of mahogany or walnut wood. As the usual thing, it is preferred to have the color of this wood somewhat darker, when finished, than would be the natural color of the wood itself. For this reason it is customary to stain the wood with a water stain, using either a mahogany water stain or a walnut water stain, according to the kind of wood. After this stain is dry, a wash coat of shellac at the rate of about ½-lb. of shellac to a gallon of alcohol, is applied and when it is dry, the wood is sanded smooth.

Following this, a coat of paste wood filler, reduced to a creamy consistency with naphtha or turpentine, should be brushed on the wood and allowed to stand 15 or 20 minutes, after which it should be wiped off with rags across the grain of the wood so as to leave the filler in the pores. After this filler coat is dry—ordinarily within 24 to 48 hours—two or more coats of varnish or lacquer are applied by spraying or brushing.

In the above mentioned case, where the stain is used, it is customary to use a filler that is darker than the body of the wood itself. Since the filler remains

KROEGER BROS.

MANUFACTURERS
SINCE 1887

WOOD FILLERS
STAIN POWDERS
STAINS

LET US MATCH MATERIALS YOU ARE NOW USING AND SUBMIT SAMPLES WITHOUT OBLIGATION OR COST.

882 McKIM ST., BALTIMORE, MD.

SPRUANCE
QUALITY

WOOD FINISHING PRODUCTS

To prove to you the superior quality of our *Flat Drawer Coater* we will send you a 5 gallon sample can at the barrel rate.

Flat Drawer Coater does not raise the grain of the wood, requires no sanding, sprays perfectly, dries quickly. In clear and several colors.

Permit us to send you 5 gallons for a trial.

THE GILBERT SPRUANCE COMPANY
PHILADELPHIA

"A FINISH FOR EVERY PURPOSE"

Kindly mention INDUSTRIAL FINISHING when writing advertisers

For a Better Finish Use GRIFFITHS

AMERICAN GROUND ITALIAN PUMICE STONE

A 99% pure product, uniform in grain and hardness. Goes further because each individual particle cuts uniformly, besides producing quicker and better work for the same reason. Our service is also an important factor, since direct importation and our own large and modernly equipped factory enable us to meet your requirements immediately.

Try us.

K. F. GRIFFITHS & COMPANY, Inc.
110 East 42nd St., New York, N. Y.

GRIFFITHS GUARANTEED PRODUCTS

Powdered Rotten Stone
Cut Felt
Rubbing Felt
Polishing Felt
Carbon-Tetra-Chloride
Oxalic Acid
Rouge
Soap Bark

ASK ABOUT THEM

"VILAS" Mixing and Storage Tanks

MEANS for mixing and keeping liquid or semi-liquid materials of different specific gravity into homogeneous and uniform condition ready for use.

LACQUERS - ENAMELS - DUCO - PAINTS, ETC.

Made in—1½ - 5 - 15 - 50 Gallon Sizes.
Air Tight—No Evaporation.
Fire Hazard Reduced.

For further information write the manufacturer

R. L. VILAS
278 Whalley Ave., New Haven, Conn.

only in the pores and is wiped off of the grain of the wood, this brings out very beautifully the rich grain of the wood and gives a pleasing finish.

Where it is not desired to stain the wood, and if the pores are not to be emphasized, it is possible to use a transparent paste wood filler directly on the wood, or after it has been given a thin coat of shellac in the same manner as outlined above. If the filler has a small amount of color in it, it will really make a more beautiful finish than if it is compeletly transparent.

Any manufacturer of stains, fillers, or other finishing materials can supply you with the necessary materials for producing this finish.—I.F.

Specific Air Pressure

What is the proper air pressure for spraying (a) Duco No. 1643 clear; (b) Duco No. 1651 flat; (c) Glidden No. 35 clear lacquer with a DeVilbiss Type A gun?—C.F.M.&Co.,Inc.

Our experimental department has found that each of these three materials can be sprayed with good results, using a pressure of from 60 to 80-lbs. An exact pressure for each paint cannot be given because this depends upon the varying conditions and the speed and inclination of the operator, but your reader will find, no doubt, that a pressure between 60 and 80-lbs., depending upon his particular conditions, will give best results.—The DeVilbiss Co.

The old time lacquer solvents were not dependable for uniformity in composition, dryness and odor.

PYLOKROMES

FAST TO LIGHT STAINS

If your work calls for stains *fast to light*—

If you stain wood, reed, rattan, veneers, compositions—

If you use as solvents Water, Alcohol, Shellac, Nitro-cellulose Lacquer, Oil, Benzol, Benzine, Gasoline, Turpentine, Wax—

Send for Testing Samples

PYLOKROME

ANILINE DYE CRYSTALS

PURE :: FAST :: UNIFORM

Pylam Products Company

Mfg. Color Chemists

799 Greenwich Street New York

Quickest-drying oil lacquer

with twice covering capacity of ordinary lacquer yet all the quality lacquer ever had.

no. 127

made by

Johnson

Save time and money through trial 5 gallons at drum price. Order it now from:

S. C. JOHNSON & SON

RACINE, WIS.

Use 127 on Reed or Fibre Furniture, and on Wood or Metal Case Goods, Desks, Chairs, Toys, etc., etc.

"AROLAC for EXCELLENCE"

AROLAC

It was our ambition for decades to have lacquers and lacquer enamels excel regular paints and varnishes not only in technical advantages and chemical supremacy, but also in dollars and cents. This is now realized in AROLAC Products. By this, we mean, first: the *covering capacity* of AROLAC; and second: the *price* which makes the use of AROLAC an obvious necessity.

ASK FOR OUR AROLAC

Wood lacquer, Silver and Aluminum lacquer, Bronze lacquer, Brush Brass lacquer and enamels in all colors, glossy and egg shell finishes.

ARIZONA LACQUER MFG. CO.
7-11 Sixteenth Street
BROOKLYN, N. Y.
Chicago, Ill., Office and Warehouse
701 So. Western Ave.
Philadelphia Office and Warehouse
8750 Eastwick Ave.

REMOVER COSTS

Greatly Reduced

Remover cost need not be excessive. Campbell offers an easy way to make Varnish or Paint Remover at a price much lower than you are paying now.

SAVE 75c A GALLON

FREE—TELLS HOW

A book "Getting Away From High Cost of Paint and Varnish Remover" tells how simply mixing two liquids will give you a remover that is equal to any—at a price much below what is usual. We shall be glad to forward you a copy of this booklet free upon request.

The M. L. Campbell Co.
1007 W. 8th St., Kansas City, Mo.

CLASSIFIED

Advertisements under this heading 45 cents a line, minimum charge $1.35. Use this department to obtain help, find positions, buy and sell equipment, dispose of manufacturing properties, etc.

SHELLAC REPRESENTATIVES

Men wanted who have established following in shellac trade. Excellent opportunity to make good connection with reputable house. Address IF-134, care INDUSTRIAL FINISHING.

SALESMEN WANTED

Old established New York varnish manufacturer, making also a full line of enamels and lacquers, wants two competent young men, preferably experienced foremen with demonstrating and selling ability to call on furniture manufacturers in Indiana and Ohio. All applications treated in strict confidence. Write IF-135, care INDUSTRIAL FINISHING.

WANTED

Experienced Finishing Foreman who knows modern production methods, decorating, etc. It will pay you to write us now. WOOD WORKERS CLEARING HOUSE, 431 South Dearborn Street, Chicago, Ill.

WANTED

Experienced Finishing Foreman for old established plant manufacturing furniture novelties. Must be capable of getting production, and experienced in striping in gold and colors, transfer or decalcomania work. Address IF-137, care INDUSTRIAL FINISHING.

VARNISH FOREMAN WANTED

Must know how to produce high-grade finished wood work made of mahogany, walnut, birch, oak; also a working knowledge of lacquer finishes. Factory located central New York. Give full particulars first letter as to experience, references and wages. We will hold confidential. Address IF-139, care INDUSTRIAL FINISHING.

SALESMAN

Manufacturers of Lacquer, Lacquer Enamels and old type finishes have a profitable opportunity for an experienced salesman with some following in this field. Salary and commission basis. Replies treated confidentially. Address IF-136, care INDUSTRIAL FINISHING.

SALESMAN WANTED

Old established New York Varnish manufacturer, making also a full line of Enamels and Lacquers, has an opening for competent young men with some experience and selling ability to call on furniture manufacturers in Indiana and Illinois. All applications treated in strict confidence. Write IF-138, care INDUSTRIAL FINISHING.

EXPERIENCED FINISHER WANTED

We want a finisher for laboratory and demonstration work. Must have broad experience and be capable of testing varnishes and lacquers. Give references, outline experience fully and state salary desired. THE FORBES VARNISH COMPANY, 3800 West 143rd St., Cleveland, Ohio.

Advertisers in this Issue

Adams & Elting Co 47
Advance Paint Co 27
Arco Company, The .... Third Cover
Arizona Lacquer Mfg. Co 98
Armitage & Co., John L 23
Ault & Wiborg Co ..... Back Cover

Biax Flexible Shaft Co 83
Binks Spray Equipment Co 89

Campbell Co., M. L 98
Commercial Solvents Corp 92
Continental Corp 93
Cooper & Co., Chas 48-53-66
Corlear Products Co 94
Curtis Pneumatic Mchy. Co 65

Dakalite Products Co., Inc 86
Day & Co., James B 84
Denny, Hilborn & Rosenbach 4
DeVilbiss Mfg. Co 8
Du Pont de Nemours & Co., E. I ..41

Eclipse Air Brush Co 75
Egyptian Lacquer Mfg. Co 50-51

Finishing Products Co 34

Glidden Co., The ..... Front Cover
Grand Rapids Blow Pipe and Dust Arrester Co 49
Grand Rapids Varnish Corp 25
Griffiths & Co., K. F 96

Hilo Varnish Corp 2

Innis, Speiden & Co 87

Johnson & Son, S. C 97
Jones-Dabney Co., Inc 33

Kay & Ess Co 88
Kessler Chemical Co 90
Kroeger Bros 95

Lacquer & Chemical Corp 85
Lasco Shellac & Lacquer Co 91
Lilly Varnish Co 6-7
Lindeman & Co., Harry J 87
Lindeman Wood Finish Co 1
Lockwood & Co 44

Matthews Corp., W. N 59
Marietta Paint & Color Co 39
Mayer & Loewenstein 15
Miner Edgar Co 77
Murphy Varnish Co 37

Newark Varnish Works 81

Paasche Airbrush Co 61
Peaslee-Gaulbert Co 91
Paramet Chemical Corp 93
Pecora Paint Co 43-88
Peerless Pneumatic Systems, Inc ..63
Pratt & Lambert, Inc 29
Pylam Products Co 97

Quincy Compressor Co 100

Rockford Varnish Co 45
Roxalin Flexible Lacquer Co 82

Sharples Solvents Corp 52
South Shore Finishing Co 75
Spruance Co., The Gilbert 95
Spraco Painting Equipment Co. 56-57
Stickney Color Co 94
Sun Varnish Co 31

Vilas, R. L 96

Waukegan Chemical Co 16
Worthington Pump & Machinery Corp 68
Yarnall Paint Co 92
Zapon Co., The ..... Second Cover

Now Ready—**Bound Volume No. 2**

Industrial Finishing

Limited number available—first come, first served. While they last, $5.00

The Compressor for perfect spray painting

THERE'S one point you've decided on—that is to get the best spray gun manufactured. You want your paint jobs to build up your reputation.

But don't overlook this fact. No spray gun is better than the Compressor that runs it. That's why you should insist on a Model "P" Quincy. You'll get steady pressure, clean, dry air free from oil, and quiet vibrationless service for a lifetime. Quincy Compressors are built to make any kind of spray gun 100% efficient. Many manufacturers of spray guns sell Quincys as original equipment. See that a Quincy runs your paint spray outfit.

Quincy P

In five sizes. Can be furnished either with gas engine or motor drive.
In portable or stationary style

Quincy Compressor Co.
305 Maine St.
Quincy, Ill.

Formerly Wall Pump and Compressor Co.

Clip and mail this ad for complete information

QUINCY COMPRESSOR CO.

Quincy QUINCY COMPRESSOR **Illinois**

K 306

ARCO
PAINTS VARNISHES ENAMELS
SNOW, sleet, rain, dust and other adverse conditions will not harm the glowing beauty of an Arcozon finish. Arcozon's ease and economy of application, extreme durability and subtle charm recommend this finish, above all others, to manufacturers who are supplying a discriminating market. Our technical department will gladly furnish you complete information.
THE ARCO COMPANY, CLEVELAND, O.
Paints • Varnishes • Enamels • Lacquers (35)
SPRAYS ON
ARCOZON
THE ARCO PYROXYLIN LACQUER SYSTEM

Wiborite

A combination that assures greater profits

The buying public insists on a product that is pleasant to look upon—well finished.

Production schedules demand a finish that is quickly and economically applied.

You are assured of both when you use Wiborite Industrial Finishing Products.

Wiborite Industrial Lacquers have a high initial lustre, they dry faster, cover solidly with fewer coats, and can be applied equally well over wood or metal. They come in 46 different colors so that you have a wide range to choose from.

For undercoats you'll find nothing better than Wiborite Sanding Surfacers. They dry quicker, sand easier, and likewise save time. They build up a body that means a better, more attractive looking finish—one that increases the sales appeal of your product.

May we send you a color card showing the entire range of 46 colors?

THE AULT & WIBORG COMPANY
VARNISH WORKS
Established 1878
Cincinnati, Ohio

INDUSTRIAL LACQUER